

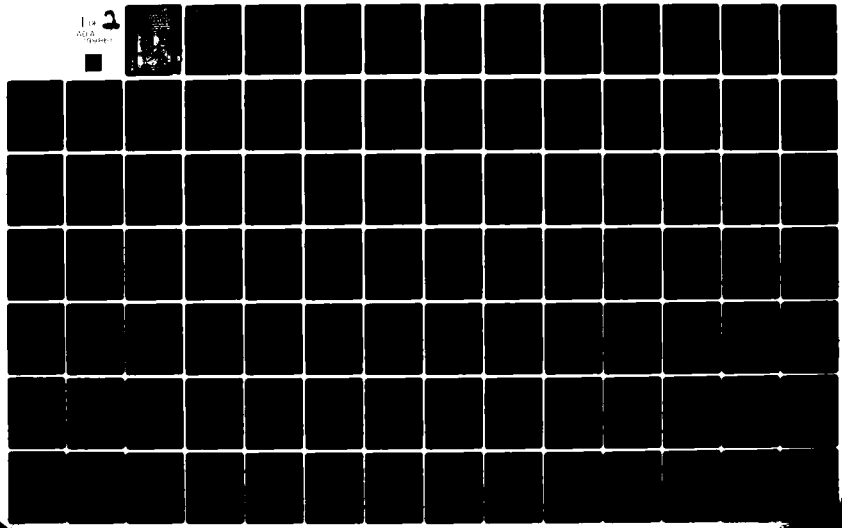
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NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATL--ETC F/G 1/2
LOS ANGELES INTERNATIONAL AIRPORT DATA PACKAGE NUMBER 3, AIRPOR--ETC(U)
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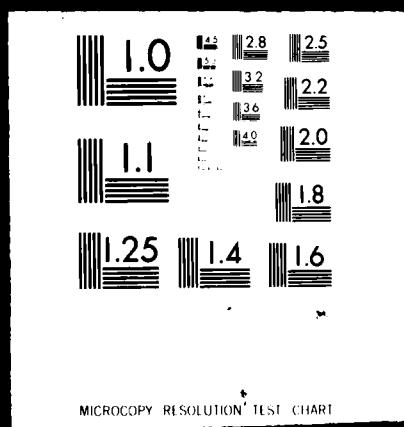
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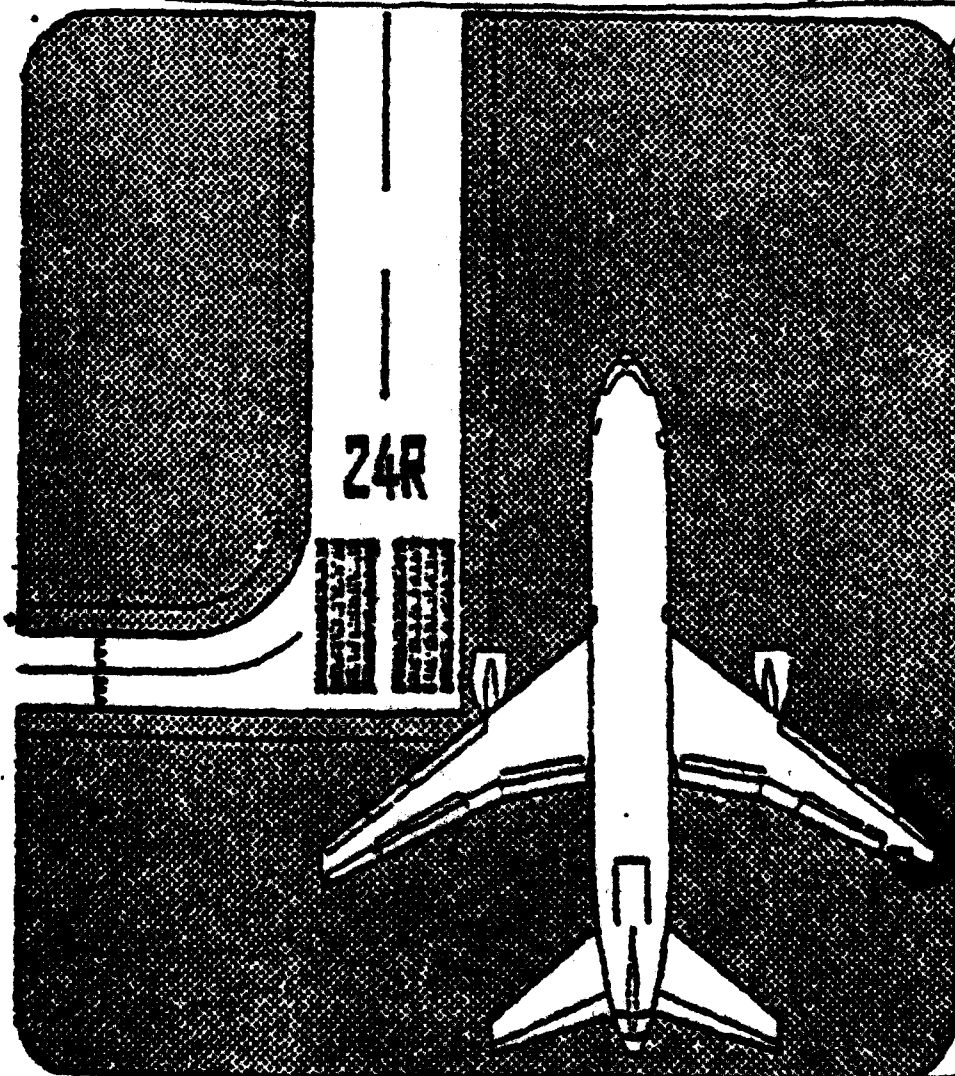
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LEVEL

6
**LOS ANGELES
INTERNATIONAL
AIRPORT**

**DATA PACKAGE NO. 3,
AIRPORT IMPROVEMENT
TASK FORCE DELAY STUDIES.**

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Number



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MARCH 1979

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**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

DATE: March 26, 1979
IN REPLY
REFER TO: ANA-220

NATIONAL AVIATION FACILITIES
EXPERIMENTAL CENTER
ATLANTIC CITY, NEW JERSEY 08405



SUBJECT: Los Angeles Simulation Model Calibration
Results and Input Data for Stage 1 Experiments

FROM: NAFEC Program Manager, ANA-220

TO: Royal Mink, AWE-4

Enclosed are data packages for review by the Task Force members.

Attachment A presents the results of the Simulation Model Calibration. This calibration was rerun based on input from the Task Force on January 22, 1979, after reviewing data package #2. This calibration includes revised departure-to-departure separations considering aircraft which departed on the north end of the airfield and crossed over to a south departure fix.

Attachment B contains the model inputs (less the demand schedule) for the Los Angeles Stage 1 Experiments. The combined lateness distribution provided by American and United Airlines is included along with the revisions to Experiments #15 and #16 involving the by-pass taxiway to runway 7L. Separation values for all the experiments are included in accordance with comments made at the meeting and discussions with Los Angeles operations personnel. (Only model input changes from the previous experiments are noted under each new Stage 1 experiment number.)

Attachment C contains the revised arrival and departure runway, class, fix, and gate distributions which may be used to establish the demand (A/C schedule) for each experiment. In addition, an estimated percentage of departures from the north side of the field to a south departure fix is included in the appendix. The values used in the distributions were obtained during discussions of the operational procedures at Los Angeles.

Please forward the data package to the Task Force participants. The stage 1 experiments will be performed after completion of the demand schedule (A/C Schedule) by the Task Force. Any comments on the calibration and the model inputs would be appreciated and included in the experiments before making the computer runs.

JOHN R. VANDERVEER

Enclosure

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1979

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ATTACHMENT A
SIMULATION MODEL
CALIBRATION OUTPUT DATA

- A. FLOW RATES
- B. DELAYS
- C. TRAVEL TIMES

} SEE HOURLY SUMMARY (TABLE 1) AND
QUARTER HOUR FIGURES 1 TO 5

Los Angeles International Airport

Los Angeles
Airport Improvement Task Force Delay Studies

March 1979

Table 1

Hourly Comparison of Output Data
for Simulation Model Calibration

Time	Arrival Flow Rate		Departure Flow Rate	
	<u>Data Model (S.D.)</u>		<u>Data Model (S.D.)</u>	
1800-1900	50	51 (0.53)	51	51 (0.63)
1900-2000	34	34 (0.53)	53	53 (1.32)
2000-2100	39	39 (0.42)	52	53 (1.58)

Time	Average Arrival Air Delay (minutes)		Average Fix to Threshold Travel Time (minutes)	
	<u>Data Model (S.D.)</u>		<u>Data Model (S.D.)</u>	
1800-1900	0.92	1.84 (0.39)	9.33	7.97 (0.40)
1900-2000	1.31	0.98 (0.15)	9.69	9.33 (0.12)
2000-2100	1.12	0.61 (0.08)	9.75	8.83 (0.11)

Time	Average Arrival Threshold to Gate Travel Time (minutes)		Average Departure Gate to Roll Travel Times (minutes)	
	<u>Data Model (S. D.)</u>		<u>Data Model (S. D.)</u>	
1800-1900	3.56	3.42 (0.08)	8.82	9.46 (0.58)
1900-2000	3.96	3.53 (0.22)	10.93	11.46 (1.34)
2000-2100	2.87	3.60 (0.22)	8.63	9.04 (1.27)

FIGURE 1

9/28/78

ARRIVAL FLOW RATE

MODEL

MODEL 3 OF LUNDIN

DATA

TOTAL FLOW RATE IN QUARTER HOUR

TIME IN QUARTER HOUR

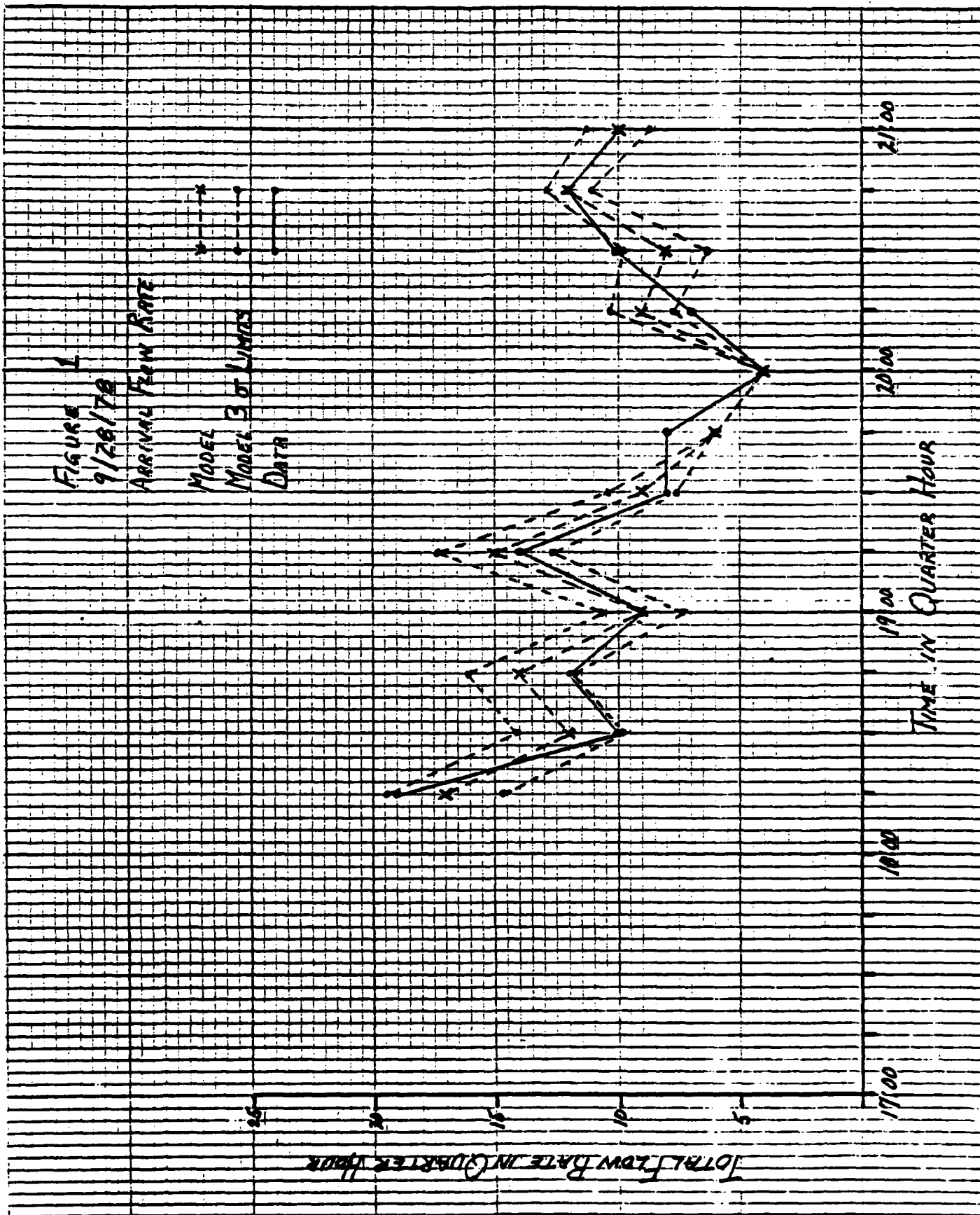


FIGURE 2
9/28/78

DEPARTURE FLOW RATE

MODEL

MODEL 30 LIMITS

DATA

DEPARTURE FLOW RATE IN QUARTER HOUR

TIME IN QUARTER HOURS

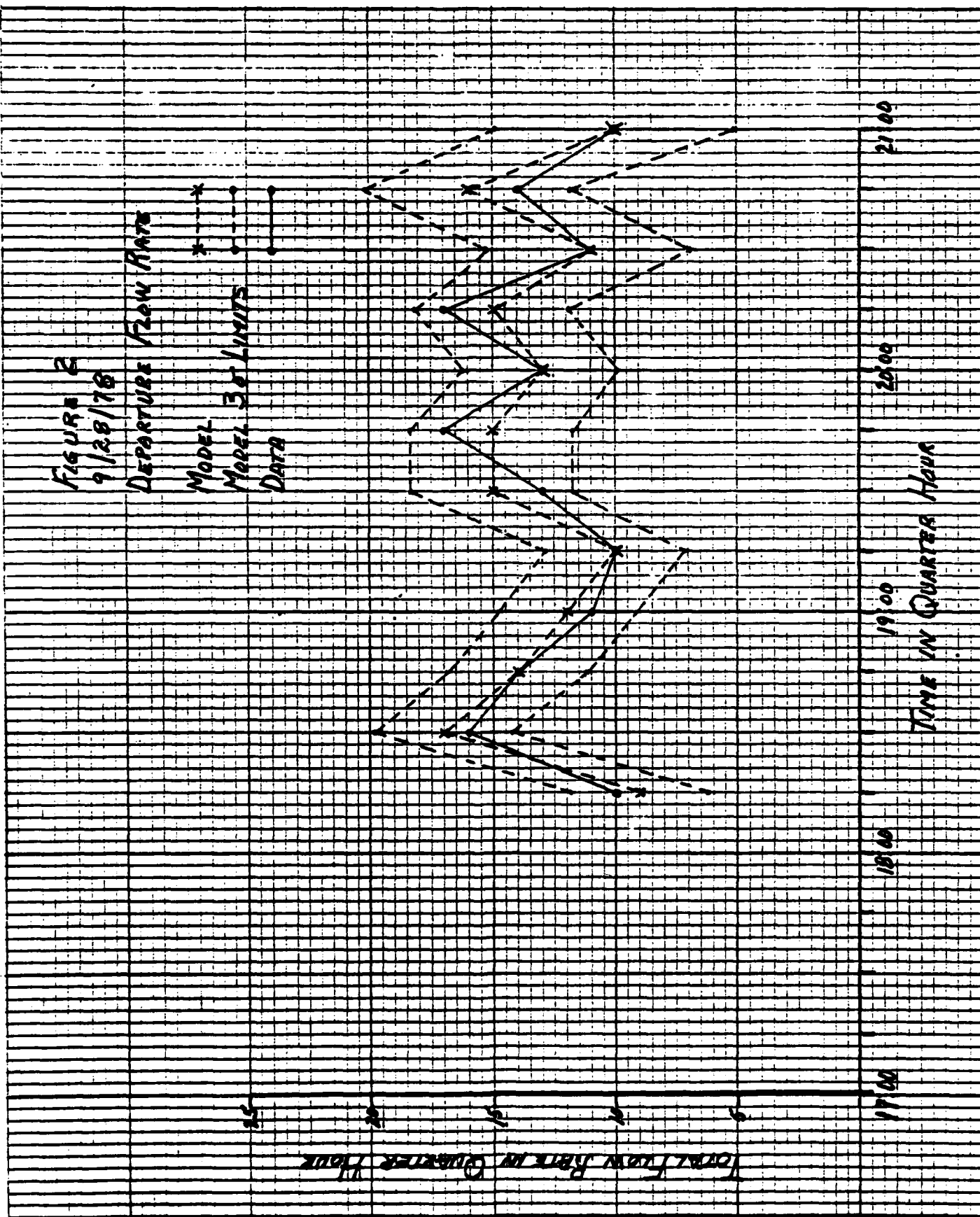


FIGURE 3
9/28/78

ARRIVAL DELAY

MODEL

MODEL 30 LIMITS

DATA

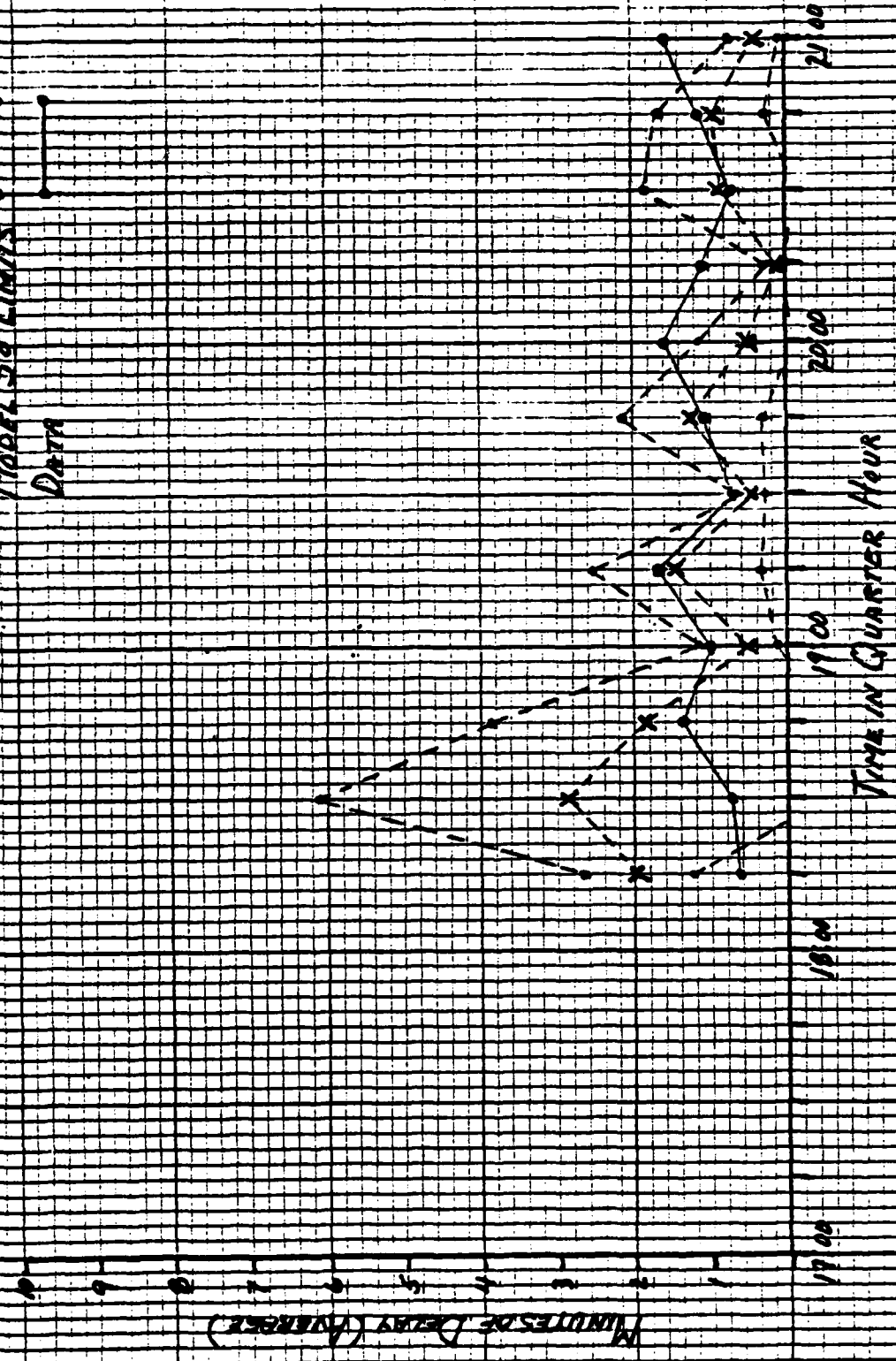
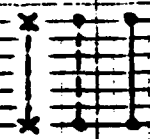


FIGURE 4
9/20/78

ARRIVAL / TRAVEL TIMES

MODEL

MODEL 30-LIMITS

DATA

X — X

—

—

MINUTES OF TRAVEL TIME (AVERAGE)

FIX TO THRESHOLD

THRESHOLD TO GATE

TIME IN QUARTER HOUR

17:00

18:00

19:00

20:00

21:00

5

6

7

8

9

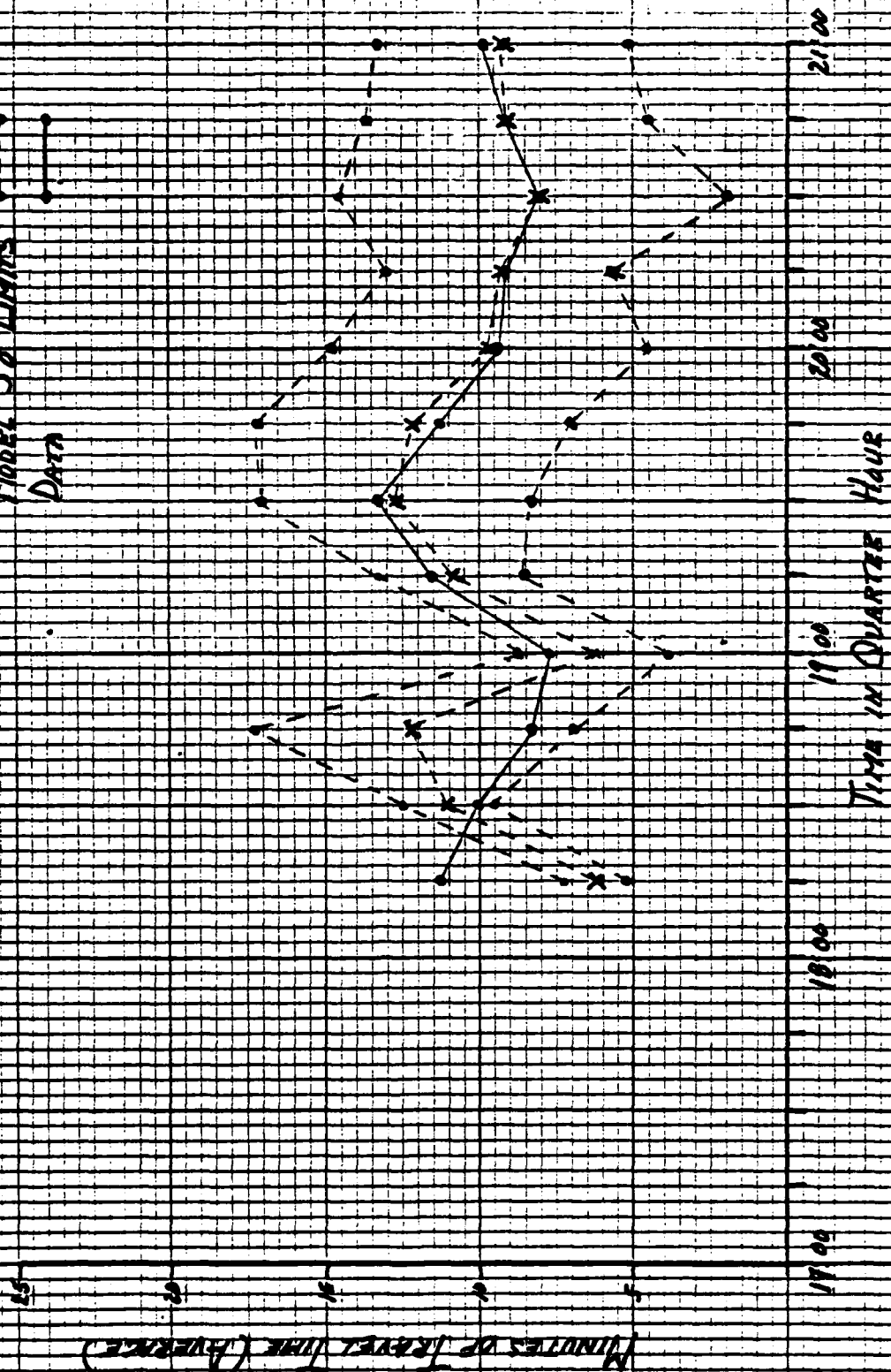
FIGURE 5
9/28/78

DEPARTURE TRAVEL TIME

MODEL

MODEL 3 σ LIMITS

DATA



INPUT DATA

LOS ANGELES INTERNATIONAL AIRPORT SIMULATION MODEL CALIBRATION RUN

NUMBER OF RANDOM NUMBER SEEDS

10

RANDOM NUMBER SEEDS

92651 91921 69011 92187 14577 10493 27011 40961 19011 63661

START TIME AND FINISH TIME

185 0 215 5

PRINT OPTIONS

F E F E F F

NUMBER OF AIRLINES

19

AIRLINE CODES

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 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1626 1627 1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679 1680 1681 1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791 1792 1793 1794 1795 1796 1797 1798 1799 1800 1801 1802 1803 1804 1805 1806 1807 1808 1809 1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 257

RUNWAY CROSSING LINKS--OCCUPANCY TIMES (SECS)

CLASS	TIME
1	20.00
2	20.00
3	20.00
4	20.00

RUNWAY CROSSING TIME AND INTERARRIVAL GAP

LINK	DELAY	MEAN	STD DEV
307	5.00	1.50	.50
312	5.00	1.50	.50
317	5.00	1.50	.50
320	5.00	1.50	.50
323	5.00	1.50	.50
204	5.00	1.50	.50
275	5.00	1.50	.50
272	5.00	1.50	.50
269	5.00	1.50	.50
266	5.00	1.50	.50
262	5.00	1.50	.50
250	5.00	1.50	.50
265	5.00	1.50	.50
203	5.00	1.50	.50

NUMBER OF EXITS

21

DISTANCE IN FEET FROM THRESHOLD TO THE EXIT TAXIWAY (EXIT LINK NO. VERSUS DISTANCE)

307	2500.0	312	4500.0	317	4501.0	320	6400.0	323	8290.0
145	2500.0	305	2600.0	310	4000.0	313	4600.0	315	5500.0
318	7500.0	277	5350.0	274	6500.0	271	7550.0	268	7820.0
204	3000.0	275	4200.0	272	5700.0	269	6150.0	266	7780.0
262	8250.0								

NUMBER OF HOLDING AREAS

1

HOLDING AREA NUMBERS

99

NUMBER OF G/A BASING AREAS

1

G/A BASING AREA NUMBERS

9

AIRLINE GATES

11	1
12	3
13	10
14	11
15	2
16	6
17	2
18	7
19	5
20	4
21	1
22	6
23	5
24	1
25	3
26	7
27	4
28	2
29	12
30	9

TRUNCATION LIMITS

UPPER LIMIT = 3.00
LOWER LIMIT = 3.00

DEPARTURE QUEUE LENGTH AND INTERARRIVAL GAP

QUEUE = 5 MEAN = 2.00 STD DEV = 0.00

LENGTHS OF COMMON APPROACH PATHS FROM OUTER MARKER TO THRESHOLD IN NAUTICAL MILES (RUNWAY NO.: A/C CLASS, LENGTH)

1	1	6.00
1	2	6.00
1	3	2.00
1	4	2.00
2	1	6.00
2	2	6.00
2	3	2.00
2	4	2.00
3	1	6.00
3	2	6.00
3	3	2.00
3	4	2.00
4	1	6.00
4	2	6.00
4	3	2.00
4	4	2.00

TAXIWAY PATH DATA

THIS AIRPORT USES THE FOLLOWING: 540
LINKS 266 PATHS
AVERAGE PATH LENGTH IS 24.91 SEGMENTS

PATH SEGMENTS 13449

LINKS 5	116	115	114	113
LINKS 4	309	362	303	
LINKS 4	302	364	368	
LINKS 6	306	362	303	164
LINKS 6	169	303	362	304
LINKS 10	309	362	303	164
LINKS 10	168	162	163	362
LINKS 14	309	362	303	164
LINKS 14	159	365	324	
LINKS 14	365	159	160	364
LINKS 14	362	304	368	

A/C SEPARATIONS
120 SEPARATION VALUES IN 4 SETS OF 32, ARRIVAL / ARRIVAL, DEPARTURE / DEPARTURE AND ARRIVAL / DEPARTURE
EACH SET OF 32 IS COMPOSED OF 16 PAIRS OF MEAN AND STANDARD DEVIATION
THE 16 SETS ARE POSSIBLE WAYS OF A/C CLASS 1 FOLLOWED BY A/C CLASS Y
THERE ARE 4 A/C CLASSES -- 1 1 D CLASS

1 1 D CLASS
2 1 C CLASS
3 1 B CLASS
4 1 A CLASS

THE ORDER OF 5575 JO 5135 JO 53000 2M1

(1.1), (1.2), (1.3), (1.4), (2.1), (2.2), (2.3), (2.4), (3.1), (3.2), (3.3), (3.4), (4.1), (4.2), (4.3), (4.4)

LEAD A/C RUNWAY 1 LEAD A/O FIX 9 TRAIL A/C RUNWAY 3 TRAIL A/C FIX 9
120 SEPARATION VALUES IN 4 SETS OF 32, A/A (MILES), D/A (MILES), D/D (MINUTES) AND A/D (MINUTES)

[illegible]

LEAD A/C RUNWAY 1 LEAD A/C FIX 9 TRAIL A/C RUNWAY 4 TRAIL A/C FIX 9
120 SEPARATION VALUES IN 4 SETS OF 32. A/A (N.MILES), Q/A (N.MILES), D/D (MINUTES) AND A/D (MINUTES)

[illegible]

[illegible][illegible][illegible]

[illegible]

LEAD A/C RUNWAY 1		LEAD A/C FIX 0		TRAIL A/C RUNWAY 2		TRAIL A/C FIX 0	
120 SEPARATION VALUES IN 4 SETS OF 32, A/A (IN-MILES), D/A (IN-MILES), D/D (MINUTES) AND A/D (MINUTES)							
2.89	.70	3.50	.65	4.12	.60	4.06	.55
2.29	.70	2.23	.65	2.77	.60	2.71	.55
2.29	.70	2.23	.65	2.17	.60	2.11	.55
2.29	.70	2.23	.65	2.17	.60	2.11	.55
.60	.26	.56	.25	.52	.24	.52	.24
.60	.26	.56	.25	.52	.24	.52	.24
.53	.25	.49	.24	.45	.23	.45	.23
.53	.25	.49	.24	.45	.23	.45	.23
1.31	.08	1.71	.08	1.71	.08	1.71	.08
.91	.08	.91	.08	.77	.08	.77	.08
.77	.08	.71	.08	.57	.08	.57	.08
.77	.08	.71	.08	.57	.08	.57	.08
.55	.16	.43	.11	.37	.11	.36	.10
.55	.16	.43	.11	.37	.11	.36	.10
.55	.16	.43	.11	.37	.11	.36	.10
.55	.16	.43	.11	.37	.11	.36	.10

LEAD A/C RUNWAY 3		LEAD A/C FIX 0		TRAIL A/C RUNWAY 4		TRAIL A/C FIX 0	
120 SEPARATION VALUES IN 4 SETS OF 32° A/A (N.MILES), D/A (N.MILES), D/D (MINUTES) AND A/D (MINUTES)							
2.89	.70	3.50	.85	4.12	.60	4.06	.55
2.29	.70	2.23	.65	2.77	.60	2.71	.55
2.29	.70	2.23	.65	2.17	.60	2.11	.55
2.29	.70	2.23	.65	2.17	.60	2.11	.55
.60	.26	.56	.25	.52	.24	.52	.24
.60	.26	.56	.25	.52	.24	.52	.24
.53	.25	.49	.24	.45	.23	.45	.23
.53	.25	.49	.24	.45	.23	.45	.23
1.31	.08	1.71	.08	1.71	.08	1.71	.08
.91	.04	.91	.08	.77	.08	.77	.08
.77	.04	.71	.08	.57	.08	.57	.08
.77	.04	.71	.08	.57	.08	.57	.08
.48	.15	.49	.18	.49	.18	.46	.09
.48	.15	.49	.18	.49	.18	.46	.09
.48	.15	.49	.18	.49	.18	.46	.09
.48	.15	.49	.18	.49	.18	.46	.09

120 SEPARATION VALUES IN 4 SETS OF 32. A/A (N.MILES), D/A (N.MILES), D/D (MINUTES) AND A/D (MINUTES)

2.89	.70	3.50	.65	4.12	.60	4.06	.55
2.29	.70	2.23	.65	2.77	.60	2.71	.55
2.29	.70	2.23	.65	2.17	.60	2.11	.55
2.29	.70	2.23	.65	2.17	.60	2.11	.55
.60	.26	.56	.25	.52	.24	.52	.24
.60	.26	.56	.25	.52	.24	.52	.24
.53	.25	.49	.24	.45	.23	.45	.23
.53	.25	.49	.24	.45	.23	.45	.23
1.31	.08	1.71	.08	1.71	.08	1.71	.08
.91	.08	.91	.08	.77	.08	.77	.08
.77	.08	.71	.08	.57	.08	.57	.08
.77	.08	.71	.08	.57	.08	.57	.08
.57	.14	.50	.19	.43	.14	.42	.09
.57	.14	.50	.19	.43	.14	.42	.09
.57	.14	.50	.19	.43	.14	.42	.09
.57	.14	.50	.19	.43	.14	.42	.09

LEAD A/C RUNWAY 4 LEAD A/C FIX 0 TRAIL A/C RUNWAY 3 TRAIL A/C FIX 0
120 SEPARATION VALUES IN 4 SETS OF 32. A/A (N.MILES), D/A (N.MILES), D/D (MINUTES) AND A/D (MINUTES)

2.89	.70	3.50	.65	4.12	.60	4.06	.55
2.29	.70	2.23	.65	2.77	.60	2.71	.55
2.29	.70	2.23	.65	2.17	.60	2.11	.55
2.29	.70	2.23	.65	2.17	.60	2.11	.55
.60	.26	.56	.25	.52	.24	.52	.24
.60	.26	.56	.25	.52	.24	.52	.24
.53	.25	.49	.24	.45	.23	.45	.23
.53	.25	.49	.24	.45	.23	.45	.23
1.31	.08	1.71	.08	1.71	.08	1.71	.08
.91	.08	.91	.08	.77	.08	.77	.08
.77	.08	.71	.08	.57	.08	.57	.08
.77	.08	.71	.08	.57	.08	.57	.08
.55	.06	.51	.14	.63	.13	.48	.09
.55	.06	.51	.14	.63	.13	.48	.09
.55	.06	.51	.14	.63	.13	.48	.09
.55	.06	.51	.14	.63	.13	.48	.09

VECTING DELAY INPUTS
FIX DELAY EVALUATION LEVEL HOLDING PCT. MAXIMUM VECTING DELAY MINIMUM HOLDING DELAY

3	10.00	100.00	10.00	0.00
4	10.00	100.00	10.00	0.00
5	10.00	100.00	10.00	0.00
6	10.00	100.00	10.00	0.00
7	10.00	100.00	10.00	0.00
8	10.00	100.00	10.00	0.00
9	10.00	100.00	10.00	0.00
10	10.00	100.00	10.00	0.00

TAKE-OFF QUEUE SWITCH FOR RUNWAY 1 = 99

TAKE-OFF QUEUE SWITCH FOR RUNWAY 2 = 99

TAKE-OFF QUEUE SWITCH FOR RUNWAY 3 = 99

TAKE-OFF QUEUE SWITCH FOR RUNWAY 4 = 99

TAKE-OFF QUEUE SWITCH FOR RUNWAY 5 = 0

GATE HOLD LIMIT = 9 HOLD TIME = 2.00

GATE HOLD LIMIT = 9 HOLD TIME = 2.00

GATE HOLD LIMIT = 9 HOLD TIME = 2.00

GATE HOLD LIMIT = 9 HOLD TIME = 2.00

AIRSPACE DELAYS

FIX OCCURRENCE PERCENTAGE HOLD MEAN HOLD SIGMA

A/C DEPARTURE RUNWAY OCCUPANCY TIME IN SECONDS (A/C CLASS, MEAN, AND STD. DEV.)

1	39.00	4.00
2	39.00	4.00
3	34.00	4.00
4	34.00	4.00

TOUCH-AND-GO RUNWAY OCCUPANCY TIME IN SECONDS (A/C CLASS, MEAN, AND STD. DEV.)

1	0.00	0.00
2	0.00	0.00
3	0.00	0.00
4	0.00	0.00

GATE SERVICE TIME DISTRIBUTION (PROBABILITY VS TIME)

CLASS 1

0.00

CLASS 2

0.00

CLASS 3

0.00

CLASS 4

0.00

A/C APPROACH SPEED IN KNOTS (A/C CLASS, MEAN, STD. DEV.)

1	140.00	5.00
2	130.00	5.00
3	120.00	5.00
4	100.00	5.00

4. ...

[illegible]

ATTACHMENT B

**INPUT DATA
STAGE 1 EXPERIMENTS**

LOS ANGELES INTERNATIONAL AIRPORT

**LOS ANGELES
AIRPORT IMPROVEMENT TASK FORCE DELAY STUDIES**

MARCH 1979

TABLE 2
LOS ANGELES DELAY EXPERIMENTS

Experiment number	Model	Study case ^a	Arrival runways	Departure runways	Weather	Demand	ATC System ^b scenario	Near Term ^c improvements
Stage 1 Experiments								
1	ASM	1	24L, 24R, 25L, 25R	24L, 24R, 25L, 25R	VFR1	1978	1978	None
2	ASM	2	24L, 24R, 25L, 25R	24L, 25R	IFR1	1978	1978	None
3	ASM	3	24R, 25L	24L, 25R	IFR2	1978	1978	None
4	ASM	5	6R, 7L	24L, 25R	VFR1	1978	1978	None
5	ASM	6	6R, 7L	24L, 25R	IFR1	1978	1978	None
6	ASM	4	6L, 6R, 7L, 7R	6L, 6R, 7L, 7R	VFR1	1978	1978	None
7	ASM	1	24L, 24R, 25L, 25R	24L, 24R, 25L, 25R	VFR1	1982	1978	None
8	ASM	2	24L, 24R, 25L, 25R	24L, 25R	IFR1	1982	1978	None
9	ASM	4	6L, 6R, 7L, 7R	6L, 6R, 7L, 7R	VFR1	1982	1978	None
10	ASM	5	6R, 7L	24L, 25R	VFR1	1982	1978	None
10A	ASM	6	6R, 7L	24L, 25R	IFR1	1982	1978	None
11	ASM	1	24L, 24R, 25L, 25R	24L, 24R, 25L, 25R	VFR1	1982	1982	None
12	ASM	2	24L, 24R, 25L, 25R	24L, 25R	IFR1	1982	1982	None
13	ASM	1	24L, 24R, 25L, 25R	24L, 24R, 25L, 25R	VFR1	1982	1982	None
15	ASM	5	6R, 7L	24L, 25R	VFR1	1982	1982	None
16	ASM	4	6L, 6R, 7L, 7R	6L, 6R, 7L, 7R	VFR1	1982	1978	None
17	ADM ^b	n.a.	n.a.	n.a.	n.a.	1978	1978	None
17A	RCM ^c	7	24L, 24R, 25L	24L, 24R, 25L	VFR1	1982	1982	Tunnel Construction
17B	RCM	7	24L, 24R, 25L, 25X ^k	24L, 24R, 25L, 25X	VFR1	1982	1982	Tunnel Construction
17C	RCM	7	24L, 24R, 25L, 26	24L, 24R, 25L, 26	VFR1	1982	1982	Comments-Usage for Light
N.A. = not applicable.								

a. Study cases (combinations of runway use and weather conditions) are defined in Figure III-1.

b. FAA will describe impact of 1982 and post-1987 ATC systems on model inputs.

c. Potential near-term improvements are identified in the Los Angeles International Airport Improvement Task Force Interim Report, and in Appendix B.

d. Airfield Simulation Model.

e. Task Force establishes packages of near-term improvements most likely to be implemented in 1982 and 1987 time frames. The 1982 package includes improvement # 2 (high-speed taxiway off Runway 25L to the south), improvement # 3 (strengthening of the Sepulveda Tunnel), (cont.)

TABLE 2 (CONTINUED)

- e. (cont.) new taxiway access to threshold of Runway 24R, and temporary holding areas on future Taxiway 75. The 1987 package includes all 1982 improvements plus Satellite 1, International Terminal, and/or remote parking for 20 aircraft at west end of airport. These packages of improvements are subject to Task Force review and revision.
- f. Impact of absence of improvements # 2 and #3 (high-speed taxiway of Runway 25L and strengthening of the Sepulveda Tunnel).
- g. Improvement # 5 is a high-speed taxi exit off Runway 7. Improvement # 7 is a high-speed taxi exit to Taxiway 47 from Runway 6R. Improvement #8 is a bypass area on the north side of Runway 7L.
- h. Annual Delay Model.
- i. Runway Capacity Model.
- j. Runway 25R closed for tunnel construction.
- k. During closure of 25R for tunnel construction, parts of Runway 25 are open for small aircraft arrivals and departures.

LAX STAGE 1, EXPERIMENT NO. 1 CONFIGURATION A

TIMES (S, M, L, E, M, I, S, M)

07 00 13 00

A/C SERVICE TIMES

1	40.00	3.00
2	30.00	3.00
3	20.00	2.00
4	20.00	2.00

A/C LATENESS DISTRIBUTION

10	0.0	-30.0	.05	-15.0	.35	0.0	.47	0.0	.67	5.0
	.79	10.0	.87	15.0	.93	30.0	.97	45.0	1.00	120.0

A/C SEPARATIONS (VFR-1)(INITIAL)

A/C SCHEDULE 1928 (INITIAL) CLASS 1 RESTRICTED TO 24R AND 24L (INSERT CROSSOVER DEPARTURES FROM NORTH END OF FIELD)

LAX STAGE 1, EXPERIMENT NO. 7 CONFIGURATION A

A/C SCHEDULE 1982 (INITIAL) CLASS 1 RESTRICTED TO 24R AND 24L (INSERT CROSSOVER DEPARTURES FROM NORTH END OF FIELD)

LAX STAGE 1, EXPERIMENT NO. 11 CONFIGURATION A

RUN TIME LINKS (LINK 372 CROSSING 24L)

RUN EXIT SELECTION

275	0.22	286	0.50	272	0.28
-----	------	-----	------	-----	------

TAXIWAY LINKS

25	1	0.01	2
370	300.0		5
321	300.0		5
372	300.0		5
373	1000.0		5
374	0.1		7
375	300.0		7

TAXIWAY ROUTES (ACCESS TO 24R AND GATE 75, NEW EXIT ROUTES FOR HIGH SPEED EXIT)

A/C SEPARATIONS (PRE-1985 VFR SEPARATIONS)

PRE-1985 VFR-1 SEPARATION CHANGES (ARRIVAL-TO-ARRIVAL FOR SAME RUNWAY)

CLASS 1	CLASS 2	CLASS 3	CLASS 4
MMT (S, D, I)	MMT (S, D, I)	MMT (S, D, I)	MMT (S, D, I)
CLASS 1	3.7 (0.43)	3.9 (0.40)	4.9 (0.37)
CLASS 2	2.9 (0.43)	2.8 (0.40)	3.6 (0.37)
CLASS 3	2.9 (0.43)	2.8 (0.40)	2.8 (0.37)
CLASS 4	2.9 (0.43)	2.8 (0.40)	2.8 (0.37)

A/C SCHEDULE 1982 (USE OF 25R, 25L BY HEAVYS AND USE OF GATE 75, REDUCED CROSSOVER DEPARTURES FROM NORTH END OF FIELD)

LAX STAGE 1, EXPERIMENT NO. 13 CONFIGURATION A

A/C SCHEDULE 1982 (INITIAL) CLASS 1 RESTRICTED TO 24R AND 24L (INSERT CROSSOVER DEPARTURES FROM NORTH END OF FIELD)

RUN EXIT SELECTION (INITIAL)

TAXIWAY ROUTES (ACCESS TO 24R AND GATE 75)

LAX STAGE 1, EXPERIMENT NO. 2, CONFIGURATION A

A/C SEPARATIONS (IFR-1)

IFR-1 SEPARATION VALUES FOR ARRIVAL-TO-ARRIVAL

	CLASS 1	CLASS 2	CLASS 3	CLASS 4
	NMI. (S.D.)	NMI. (S.D.)	NMI. (S.D.)	NMI. (S.D.)
CLASS 1	5.2 (0.70)	6.1 (0.45)	7.0 (0.60)	6.8 (0.50)
CLASS 2	6.2 (0.70)	6.1 (0.45)	5.0 (0.60)	4.8 (0.50)
CLASS 3	6.2 (0.70)	6.1 (0.45)	4.0 (0.60)	3.8 (0.50)
CLASS 4	6.2 (0.70)	6.1 (0.45)	4.0 (0.60)	3.8 (0.50)

IFR-1 SEPARATION VALUES FOR DEPARTURE-TO-DEPARTURE

	CLASS 1	CLASS 2	CLASS 3	CLASS 4
	NMI. (S.D.)	NMI. (S.D.)	NMI. (S.D.)	NMI. (S.D.)
CLASS 1	1.64(0.08)	2.14(0.08)	2.14(0.08)	2.14(0.08)
CLASS 2	1.14(0.08)	1.14(0.08)	1.13(0.08)	1.13(0.08)
CLASS 3	1.13(0.08)	1.14(0.08)	1.13(0.08)	1.13(0.08)
CLASS 4	1.13(0.08)	1.14(0.08)	1.13(0.08)	1.13(0.08)

IFR-1 SEPARATION VALUES FOR DEPARTURE-TO-ARRIVAL

	CLASS 1	CLASS 2	CLASS 3	CLASS 4
	NMI. (S.D.)	NMI. (S.D.)	NMI. (S.D.)	NMI. (S.D.)
CLASS 1	2.0 (0.26)	2.0 (0.25)	2.0 (0.24)	2.0 (0.24)
CLASS 2	2.0 (0.26)	2.0 (0.25)	2.0 (0.24)	2.0 (0.24)
CLASS 3	2.0 (0.25)	2.0 (0.24)	2.0 (0.23)	2.0 (0.23)
CLASS 4	2.0 (0.25)	2.0 (0.24)	2.0 (0.23)	2.0 (0.23)

IFR-1 ARRIVAL-TO-ARRIVAL AND DEPARTURE-TO-ARRIVAL SEPARATIONS FOR DEPENDENT

RUNWAYS ARE 100 PERCENT AND 40 PERCENT OF SAME RUNWAY SEPARATIONS

A/C SCHEDULE 1978 (CLASS 1 RESTRICTED TO 24R AND 24L) (INSERT CROSSOVER

DEPARTURES FROM NORTH END OF FIELD) (SHIFT DEPARTURE DEMAND FROM 24R TO 24L

AND 25L TO 25R)

LAX STAGE 1, EXPERIMENT NO. 8, CONFIGURATION A

A/C SCHEDULE 1982 (CLASS 1 RESTRICTED TO 24R AND 24L) (INSERT CROSSOVER

DEPARTURES FROM NORTH END OF FIELD) (SHIFT DEPARTURE DEMAND FROM 24R TO 24L

AND 25L TO 25R)

LAX STAGE 1, EXPERIMENT NO. 12, CONFIGURATION A

RV EXIT SELECTIONS

	275	0.22	284	0.50	272	0.28
TAXIWAY LINKS	275	0.22	284	0.50	272	0.28
370	1	0.01	7			
371	300.0	5.11				
372	300.0	5				
373	1000.0	5				
374	0.1	7				
375	300.0	3				

TAXIWAY ROUTES ACCESS TO 24R AND GATE 75 NEW EXIT ROUTES FOR HIGH SPEED EXIT)

A/C SEPARATIONS (IFR-1) (PRE-1985 SEPARATION VALUES)

PRE-1985 IFR-1 SEPARATION VALUE FOR ARRIVAL-TO-ARRIVAL

	CLASS 1	CLASS 2	CLASS 3	CLASS 4
	NMI. (S.D.)	NMI. (S.D.)	NMI. (S.D.)	NMI. (S.D.)
CLASS 1	4.0 (0.43)	3.9 (0.40)	4.9 (0.37)	4.7 (0.31)
CLASS 2	4.0 (0.43)	3.9 (0.40)	3.9 (0.37)	3.7 (0.31)
CLASS 3	4.0 (0.43)	3.9 (0.40)	3.9 (0.37)	3.7 (0.31)

CLASS 4 4.0 (0.43) 3.9 (0.40) 3.9 (0.37) 3.7 (0.31)
 A/C SCHEDULE 1982 (USE OF 25R/25L BY HEAVYS AND USE OF GATE 75 REDUCED CROSSOVER
 DEPARTURES FROM NORTH END OF FIELD)

LAX STAGE 1, EXPERIMENT NO. 3 CONFIGURATION A
 IFR-2 RUNWAY CROSSING LINK CLEARANCE TIMES (ADD 5 SECONDS TO ARRIVAL ON RUNWAY)
 2 307 30 30 38 40 22 22 23 26 30 30 30 30
 2 312 47 47 51 40 31 31 33 42 30 30 30 30
 2 317 57 57 51 40 36 36 38 42 30 30 30 30
 2 320 61 59 51 40 43 43 42 42 30 30 30 30
 2 323 61 59 51 40 46 46 42 42 30 30 30 30
 3 225 56 56 45 50 35 35 32 42 30 30 30 30
 3 272 57 61 77 50 42 42 42 42 30 30 30 30
 3 269 52 61 77 50 63 63 42 42 30 30 30 30
 3 262 72 67 65 57 46 46 42 42 30 30 30 30
 3 280 61 64 68 57 47 47 42 42 30 30 30 30
 3 280 56 51 59 47 47 47 42 42 30 30 30 30
 4 279 56 51 59 47 47 47 42 42 30 30 30 30
 4 258 72 67 65 57 47 47 42 42 30 30 30 30
 4 284 63 63 52 50 29 29 21 42 30 30 30 30
 -4 265 72 67 65 57 44 44 42 42 30 30 30 30

ANY ARRIVAL OCCUPANCY TIMES (OVER PLUS 5.0 SEC.)
 IFR-2 RUNWAY ARRIVAL OCCUPANCY TIMES (CALCULATION DATA PLUS 5.0 SECONDS)

1 11
 4000 42.0 4280 52.0 4501 59.4 5500 50.7 5700 47.0
 6150 47.0 6400 54.9 6500 58.2 7500 60.8 7550 58.5
 7780 59.2
 2 16
 2200 39.5 2580 42.8 3000 56.0 4280 45.6 4500 57.7
 5501 51.8 5350 47.4 5500 43.5 5700 42.8 6150 51.8
 6400 53.8 6500 56.2 7550 56.6 7780 59.0 7820 64.0
 8250 63.8
 3 13
 2200 36.6 2580 41.9 2600 40.0 3000 47.7 4000 38.8
 4280 64.3 4500 53.1 4501 43.0 4600 51.0 5350 55.3
 5700 65.0 7550 68.3 7780 91.0
 4 7
 2000 40.0 2580 37.4 4280 43.5 4500 50.0 5350 49.5
 5700 57.0 7780 55.0

A/C SEPARATIONS (IER-2) (CHANGE IER-1 A/B BASED ON ARRIVAL RUNWAY OCCUPANCY)
 IFR-2 SEPARATION VALUES SPECIAL A/D SEPARATION BASED ON ARRIVAL RUNWAY OCCUPANCY
 CLASS 1 CLASS 2 CLASS 3 CLASS 4
 MINUTES (S.D.) MINUTES (S.D.) MINUTES (S.D.) MINUTES (S.D.)
 CLASS 1 0.96 (0.16) 0.86 (0.19) 1.05 (0.23) 0.82 (0.09)
 CLASS 2 0.96 (0.16) 0.86 (0.19) 1.05 (0.23) 0.82 (0.09)
 CLASS 3 0.96 (0.16) 0.86 (0.19) 1.05 (0.23) 0.82 (0.09)
 CLASS 4 0.96 (0.16) 0.86 (0.19) 1.05 (0.23) 0.82 (0.09)
 IER-2 SEPARATION CHANGES (IER-1 VALUES AND 100 PERCENT OF SAME RUNWAY
 SEPARATIONS FOR DEPENDENT RUNWAY SEPARATIONS)

A/C SCHEDULE 1978 (CLASS 1 RESTRICTED TO 24R AND 25L) (INSERT CROSSOVER
 DEPARTURES FROM NORTH END OF FIELD) (NO ARRIVALS ON 24L AND 25R, NO DEPARTURES
 ON 24R AND 25L)

LAX STAGE 1, EXPERIMENT NO. 4 CONFIGURATION B
 TIMES (START, FINISH)

00 00 06 30

ANY WAIVES

00R 07L 24L 25R

ANY FWD LINKS

151 422 423 411

LAX ANY XINGS COME16. R

2 266 37 37 36 33

2 280 45 40 56 49

4 266 45 45 42 42

4 282 29 29 21 42

4 260

-4 280 29 29 21 42

ANY EXIT SELECTION

1 1

310 0.30 305 0.40 145 0.30

2 1 1

310 0.54 305 0.37 145 0.09

1 1 1

310 0.54 305 0.37 145 0.09

4 1 1

310 0.54 305 0.37 145 0.09

1 2 4

277 0.67 278 0.20 282 0.07 286 0.06

2 2 4

277 0.67 278 0.20 282 0.07 286 0.06

1 2 4

274 0.25 277 0.25 282 0.25 260 0.25

4 2 2

260 0.99 268 0.01

ANY EXIT DISTANCES

10

310 5630 305 7050 145 7490 274 4820 278 4650

282 7130 286 7400 277 6030 260 1970 268 3440

ANY ARRIVAL OCCUPANCY TIMES

1 7

5630 47.0 6030 60.0 6650 66.0 7050 70.0 7130 76.0

7400 76.0 7490 70.0

2 7

5630 48.0 6030 60.0 6650 66.0 7050 70.0 7130 76.0

7400 76.0 7490 75.0

3 5

1970 42.0 4820 44.0 6030 43.0 7130 139.0 7490 139.0

4 2

1970 42.0 7490 139.0

TARUNAY TWO-WAY

LOS ANGELES CONFIGURATION #

002

359 311

002

331 359

002

355 206

002

206 311

002

354 205

002

205 353

002

CLASS 1 15.0 (0.01) 15.0 (0.01) 15.0 (0.01) 15.0 (0.01)

CLASS 2 15.0 (0.01) 15.0 (0.01) 15.0 (0.01) 15.0 (0.01)

CLASS 3 15.0 (0.01) 15.0 (0.01) 15.0 (0.01) 15.0 (0.01)

CLASS 4 15.0 (0.01) 15.0 (0.01) 15.0 (0.01) 15.0 (0.01)

VFR-1 FOR 1978 SPECIAL A/D SEPARATIONS (RUNWAYS 6R-24L AND 7L-25R)

CLASS 1 CLASS 2 CLASS 3 CLASS 4

MINUTES (S.O.) MINUTES (S.O.) MINUTES (S.O.) MINUTES (S.O.)

CLASS 1 0.88 (0.14) 0.78 (0.19) 0.97 (0.23) 0.74 (0.09)

CLASS 2 0.88 (0.14) 0.78 (0.19) 0.97 (0.23) 0.74 (0.09)

CLASS 3 0.88 (0.14) 0.78 (0.19) 0.97 (0.23) 0.74 (0.09)

CLASS 4 0.88 (0.14) 0.78 (0.19) 0.97 (0.23) 0.74 (0.09)

A/C SCHEDULE 1978 (INITIAL) (RESTRICT CLASS 1 TO 6R AND 24L)

FIX TRAVEL TIMES CONFIGURATION "B"

1 1 1 33.0 180.0

1 1 2 33.0 180.0

1 1 3 34.0 180.0

2 1 2 28.5 180.0

2 1 3 31.5 180.0

2 1 4 31.5 180.0

3 1 1 22.5 192.9

3 1 2 22.5 192.9

3 1 3 22.5 180.0

3 1 4 25.5 180.0

4 1 1 24.0 192.0

4 1 2 24.0 192.0

4 1 3 24.0 180.0

4 1 4 24.0 180.0

5 1 2 22.5 192.9

5 1 3 22.5 180.0

5 1 4 18.0 180.0

8 1 3 18.0 180.0

8 1 4 18.0 180.0

1 2 1 33.0 180.0

1 2 2 34.5 192.1

1 2 3 34.5 180.0

2 2 2 34.0 180.0

2 2 3 36.0 180.0

2 2 4 34.0 180.0

3 2 2 21.0 210.0

3 2 3 21.0 180.0

3 2 4 18.0 180.0

4 2 1 24.0 192.0

4 2 2 24.0 192.0

4 2 3 24.0 192.0

4 2 4 24.0 180.0

5 2 2 18.0 180.0

5 2 3 18.0 180.0

5 2 4 18.0 180.0

-8 2 2 18.0 180.0

LAX STAGE 1, EXPERIMENT NO. 10 CONFIGURATION B

A/C SCHEDULE 1982 (CLASS 1 RESTRICTED TO 6R AND 24L) (INITIAL)

LAX STAGE 1, EXPERIMENT NO. 15 CONFIGURATION B

RV EXIT SELECTION

[illegible]

LAX STAGE 1, EXPERIMENT NO. 5, CONFIGURATION B				
A/C SEPARATIONS (1FR-1)				
ITEM-1 FOR 1978 SPECIAL D/A SEPARATIONS (RUNWAYS 24L-06, 7L AND 25R-06, 7L)				
	CLASS 1	CLASS 2	CLASS 3	CLASS 4
	NML (S.D.)	NML (S.D.)	NML (S.D.)	NML (S.D.)
CLASS 1	15.0 (0.01)	15.0 (0.01)	15.0 (0.01)	15.0 (0.01)
CLASS 2	15.0 (0.01)	15.0 (0.01)	15.0 (0.01)	15.0 (0.01)
CLASS 3	15.0 (0.01)	15.0 (0.01)	15.0 (0.01)	15.0 (0.01)
CLASS 4	15.0 (0.01)	15.0 (0.01)	15.0 (0.01)	15.0 (0.01)
A/C SCHEDULE 1978 (INITIAL) (RESTRICT CLASS 1 TO 6R AND 24L)				

LAX STAGE 1, EXPERIMENT NO. 10A
A/C SCHEDULE 1982 (RESTRICT CLASS 1 TO 6B AND 24L)

LAX STAGE 1, EXPERIMENT NO. 4 - CONFIGURATION C			
TIMES (START, FINISH)			
07 00	13 00		
BUY NAMES			
068	061	078	071
BUY END LINKS			
121	323	410	422
BUY XING LINKS			

NOY	XING	LINKS
1	312	64 61 58 50 67 67 62 62 30 30 30
1	307	53 51 62 51 47 47 42 42 30 30 30
3	265	32 69 39 35 67 67 62 62 30 30 30
3	258	18 34 32 35 67 47 47 42 30 30 30

[illegible]

ANY EXIT DISTANCES

[illegible]

TARIWAY TWO-WAY LOS ANGELES CONFIGURATION C

004	361	166	303	362					
004	362	303	166	363					
004	363	166	303	362	302	301			
006	301	302	362	303	166	363			
005	166	303	362	302	301				
003	301	302	362	303	166				
002	368	250							
002	250	366							
004	366	250	176	360	177	357			
006	357	177	360	176	250	366			
008	330	126	359	125	357	177	360	176	
008	176	360	177	357	125	359	126	330	
005	330	126	359	125	357				
005	357	125	359	126	330				
007	331	359	125	357	177	360	176		
007	176	360	177	357	125	359	331		
004	331	359	125	357					
004	357	125	359	331					
010	266	267	268	249	366	250	176	360	177
010	357	177	360	176	250	366	249	248	247
008	266	267	268	249	366	250	176	360	
008	360	176	250	366	249	248	267	266	
006	202	113	114	115	116	350			
006	350	116	115	114	113	202			
005	113	114	115	116	350				
005	350	116	115	114	113				
350	116	115	114	113					

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A/C SEPARATIONS (VFR-1 INITIALS)
A/C SCHEDULE 1928 (INITIAL CLASS 1 RESERVICED TO AR AND ALLIEMERT CROSSOVER
DEPARTURES FROM NORTH END OF FIELD)
FIX TRAVEL TIMES CONFIGURATION "C"

1 1 33.0 180.0

1	1	1	2	33.0	180.0
1	1	1	1	34.0	180.0
2	1	1	2	28.5	180.0
2	1	1	1	31.5	180.0
2	1	1	4	31.5	180.0
3	1	1	1	22.5	192.9
3	1	1	2	22.5	192.9
3	1	1	3	22.5	180.0
3	1	1	4	25.5	180.0
4	1	1	1	24.0	192.0
4	1	1	2	24.0	192.0
4	1	1	3	24.0	180.0
4	1	1	4	24.0	180.0
5	1	1	2	22.5	192.9
5	1	1	3	22.5	180.0
5	1	1	4	18.0	180.0
6	1	1	3	18.0	180.0
6	1	1	4	18.0	180.0
7	1	2	1	36.0	196.4
7	1	2	2	36.0	180.0
7	1	2	3	36.0	180.0
7	1	2	4	28.5	180.0
7	1	2	5	28.5	180.0
7	1	2	6	28.5	180.0
7	1	2	7	25.5	191.3
7	1	2	8	25.5	191.3
7	1	2	9	25.5	191.3
7	1	2	10	25.5	180.0
7	1	2	11	25.5	180.0
7	1	2	12	25.5	180.0
7	1	2	13	25.5	180.0
7	1	2	14	25.5	180.0
7	1	2	15	25.5	180.0
7	1	2	16	25.5	180.0
7	1	2	17	25.5	180.0
7	1	2	18	25.5	180.0
7	1	2	19	25.5	180.0
7	1	2	20	25.5	180.0
7	1	2	21	25.5	180.0
7	1	2	22	25.5	180.0
7	1	2	23	25.5	180.0
7	1	2	24	25.5	180.0
7	1	2	25	25.5	180.0
7	1	2	26	25.5	180.0
7	1	2	27	25.5	180.0
7	1	2	28	25.5	180.0
7	1	2	29	25.5	180.0
7	1	2	30	25.5	180.0
7	1	2	31	25.5	180.0
7	1	2	32	25.5	180.0
7	1	2	33	25.5	180.0
7	1	2	34	25.5	180.0
7	1	2	35	25.5	180.0
7	1	2	36	25.5	180.0
7	1	2	37	25.5	180.0
7	1	2	38	25.5	180.0
7	1	2	39	25.5	180.0
7	1	2	40	25.5	180.0
7	1	2	41	25.5	180.0
7	1	2	42	25.5	180.0
7	1	2	43	25.5	180.0
7	1	2	44	25.5	180.0
7	1	2	45	25.5	180.0
7	1	2	46	25.5	180.0
7	1	2	47	25.5	180.0
7	1	2	48	25.5	180.0
7	1	2	49	25.5	180.0
7	1	2	50	25.5	180.0
7	1	2	51	25.5	180.0
7	1	2	52	25.5	180.0
7	1	2	53	25.5	180.0
7	1	2	54	25.5	180.0
7	1	2	55	25.5	180.0
7	1	2	56	25.5	180.0
7	1	2	57	25.5	180.0
7	1	2	58	25.5	180.0
7	1	2	59	25.5	180.0
7	1	2	60	25.5	180.0
7	1	2	61	25.5	180.0
7	1	2	62	25.5	180.0
7	1	2	63	25.5	180.0
7	1	2	64	25.5	180.0
7	1	2	65	25.5	180.0
7	1	2	66	25.5	180.0
7	1	2	67	25.5	180.0
7	1	2	68	25.5	180.0
7	1	2	69	25.5	180.0
7	1	2	70	25.5	180.0
7	1	2	71	25.5	180.0
7	1	2	72	25.5	180.0
7	1	2	73	25.5	180.0
7	1	2	74	25.5	180.0
7	1	2	75	25.5	180.0
7	1	2	76	25.5	180.0
7	1	2	77	25.5	180.0
7	1	2	78	25.5	180.0
7	1	2	79	25.5	180.0
7	1	2	80	25.5	180.0
7	1	2	81	25.5	180.0
7	1	2	82	25.5	180.0
7	1	2	83	25.5	180.0
7	1	2	84	25.5	180.0
7	1	2	85	25.5	180.0
7	1	2	86	25.5	180.0
7	1	2	87	25.5	180.0
7	1	2	88	25.5	180.0
7	1	2	89	25.5	180.0
7	1	2	90	25.5	180.0
7	1	2	91	25.5	180.0
7	1	2	92	25.5	180.0
7	1	2	93	25.5	180.0
7	1	2	94	25.5	180.0
7	1	2	95	25.5	180.0
7	1	2	96	25.5	180.0
7	1	2	97	25.5	180.0
7	1	2	98	25.5	180.0
7	1	2	99	25.5	180.0
7	1	2	100	25.5	180.0

3	3	1	18.0	180.0
3	3	2	18.0	180.0
3	3	3	18.0	180.0
3	3	4	18.0	180.0
4	3	1	24.0	192.0
4	3	2	24.0	192.0
4	3	3	24.0	180.0
4	3	4	24.0	180.0
5	3	2	21.0	180.0
5	3	3	18.0	180.0
7	3	2	18.0	180.0
7	3	4	18.0	180.0
-B	3	4	18.0	180.0

LAX STAGE 1, EXPERIMENT NO. 9 CONFIGURATION C
 A/C SCHEDULE 1982 (INITIAL) (CLASS 1 RESTRICTED TO 6R AND 6L) (INSERT CROSSOVER
 DEPARTURES FROM NORTH END OF FIELD)

LAX STAGE 1, EXPERIMENT NO. 14 CONFIGURATION C
 RWY LINKS LINK 378 CROSSING 7L)

30 30 30 30

RWY EXIT SELECTION

1	1	2	1	0.30
369	0.70	145		
2	1	2		
369	0.91	145	0.09	
3	1	2		
369	0.91	145	0.09	
4	1	2		
369	0.91	145	0.09	
1	4	2		
272	0.01	376	0.99	
2	4	3		
272	0.01	376	0.99	
3	4	3		
276	0.25	376	0.50	260 0.25
4	4	2		
260	0.99	248	0.01	

RWY EXIT DISTANCES

310	5630	305	7030	145	7490	312	3840	307	5800
272	5500	275	7430	285	7300	269	6090	258	1970
277	6030	278	6650	282	7130	286	7400	274	4820
260	1970	268	3450	266	3450	376	6030	369	6400

TAXIWAY LINKS

377	0.1	7
378	500.0	6
379	1000.0	6

✓ TAXIWAY ROUTES (NEW ROUTES TO RUNWAY 7R FROM BY PASS OF 7L, NEW HIGH SPEED
 EXIT ROUTES FOR RUNWAY 6R AND 7L)

DISTRIBUTIONS FOR
LOS ANGELES OPERATIONS

ATTACHMENT C

LOS ANGELES INTERNATIONAL AIRPORT

LOS ANGELES
AIRPORT IMPROVEMENT TASK FORCE DELAY STUDIES

MARCH 1979

TABLE 3

% of Class 3: Arrival Fix/Runway Distribution
(B)

Runway (RWY)	Ontario (T)	Seal Beach (G)	Ventura (V)	Fillmore (F)	Van Nuys (VNY)	Northeast Quadrant (NE)	Southeast Quadrant (SE)	Northwest Quadrant (NW)	Southwest Quadrant (SW)
24R	28.1	21.9	32.8	12.5	3.0	1.7			
24L	31.8	45.5	13.6	3.5	4.6	1.0			
25R	13.3	33.3	33.3	13.3	6.8				
25L	54.7	21.7	11.9	4.5		7.2			

% of Class 4: Arrival Fix/Runway Distribution
(A)

Runway (RWY)	Ontario (T)	Seal Beach (G)	Ventura (V)	Fillmore (F)	Van Nuys (VNY)	Northeast Quadrant (NE)	Southeast Quadrant (SE)	Northwest Quadrant (NW)	Southwest Quadrant (SW)
24R	33.3	33.3	25.0		8.4				
24L	50.0	20.0	20.0		10.0				
25R	25.0	25.0	25.0		25.0				
25L	33.3	44.5	11.1		11.1				

TABLE 3
% of Class 1: Arrival Fix/Runway Distribution
(D)

Runway (RWY)	Ontario (T)	Seal Beach (G)	Ventura (V)	Fillmore (F)	Van Nuys (VNY)	Northeast Quadrant (NE)	Southeast Quadrant (SE)	Northwest Quadrant (NW)	Southwest Quadrant (SW)
24R	36.8	5.3	5.3	52.6					
24L	53.8	7.7		38.5					
25R	90.0			10.0					
25L	89.3 (67)	3.7		7.0					

=100%
per
runway

% of Class 2: Arrival Fix/Runway Distribution
(C)

Runway (RWY)	Ontario (T)	Seal Beach (G)	Ventura (V)	Fillmore (F)	Van Nuys (VNY)	Northeast Quadrant (NE)	Southeast Quadrant (SE)	Northwest Quadrant (NW)	Southwest Quadrant (SW)
24R	25.0	3.0	17.0	54.0	1.0				
24L	46.2	3.0	11.3	38.5	1.0				
25R	28.0	6.2	2.3	62.2	1.3				
25L	73.9	13.3	1.3	9.8	1.7				

Table 4

43

% of Class 1(D): Arrival and Departure
Runway/Gate Distributions

	Arrivals				Departures			
Rwy	24R	24L	25R	25L	24R	24L	25R	25L
Gate Area	(No. of A/cft)	()	()	()	()	()	()	()
1	1.1 (1)							
2	7.4 (7)	2.1 (2)		9.6 (9)		19.2 (48)	0.4 (1)	
3	6.4 (6)	1.1 (1)				10.4 (26)		
4	1.1 (1)	3.2 (3)		16.0 (15)	0.8 (2)	21.6 (54)		0.4 (1)
5				6.4 (6)		8.4 (21)		
6	3.2 (3)			10.6 (10)	0.8 (2)	6.0 (15)		1.2 (3)
7	1.1 (1)		1.1 (1)	19.1 (18)		8.8 (22)		
8		1.1 (1)		9.5 (9)	0.8 (2)	17.2 (43)	0.4 (1)	
9								
10						2.4 (6)		
11						0.8 (2)		
12							0.4 (1)	
13								

44

[illegible]

Table 4 (continued)

% of Class 3(B): Arrival and Departure
Runway/Gate Distributions

	Arrivals				Departures			
Rwy	24R	24L	25R	25L	24R	24L	25R	25L
Gate Area	(No. of Acft)	()	()	()	()	()	()	()
1								
2					0.5 (1)			
3								
4			2.7 (4)	1.4 (2)		0.5 (1)		1.0 (2)
5				0.7 (1)	0.5 (1)		0.5 (1)	1.0 (2)
6			1.4 (2)	0.7 (1)			2.2 (4)	
7			1.4 (2)	1.4 (2)			0.5 (1)	
8					0.5 (1)	0.5 (1)		
9			2.0 (3)	18.3 (27)			10.3 (19)	18.9 (35)
10	0.7 (1)			3.4 (5)		0.5 (1)	0.5 (1)	1.0 (2)
11	51.0 (75)	13.5 (20)	0.7 (1)		16.2 (30)	10.8 (20)	19.5 (36)	14.1 (26)
12				0.7 (1)			0.5 (1)	
13								

Table 4 (continued)

% of Class 4(A): Arrival and Departure
Runway/Gate Distributions

	Arrivals				Departures			
Rwy	24R	24L	25R	25L	24R	24L	25R	25L
Gate Area	(No. of Acft)	()	()	()	()	()	()	()
1								
2								
3								
4								
5								
6								
7								
8								
9			5.9 (1)	5.9 (1)	2.2 (1)	2.2 (1)		27.3 (12)
10	5.9 (1)				2.3 (1)	2.3 (1)	2.3 (1)	
11	64.7 (11)	17.6 (3)			22.7 (10)	18.2 (8)	6.8 (3)	11.4 (5)
12								2.3 (1)

TABLE 5

ARRIVAL AIRCRAFT LATENESS DISTRIBUTION
(Average deviation from schedule, excluding
delays due to destination airport)

<u>Amount of time late or early</u>	<u>Percent of flights late or early (%)</u>
More than 15 min. early	4.59
less than 15 min. early	29.83
On time	12.89
less than 5 minutes late	20.10
5 to 10 minutes late	11.35
10 to 15 minutes late	7.89
15 to 30 minutes late	7.83
30 to 45 minutes late	2.54
45 to 60 minutes late	1.14
more than 60 minutes late	1.84
Total =	<u>100.00</u>

Source: Combination of American and United Airline data provided
to Los Angeles Task Force on 10/10/78.

TABLE 6

% of Departures From
Runways 24R and 24L
Which Crossover Departure
Paths of Runways 25R & 25L

	Class 1(d)	Class 2(e)
1978 Data	71.4%	26.7% (Convenience to Customer)
Pre-1985 Convenience to customer (Under saturation conditions)	5.0%	5.0%

EXIT TAXIWAY UTILIZATION:

Table 7

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RUNWAY 7L

EXIT LINK NO.

OBSERVED PROBABILITY OF USE

(NUMBER OF AIRCRAFT)

AVERAGE RUNWAY OCCUPANCY (SEC)

CLASS	274	277	278	282	260	286
1 (D)						.
2 (C)		0.67 (10) 60	0.20 (3) 66	0.07 (1) 76		0.06 (1) 76
3 (B)	0.25 (1) 64	0.25 (1) 63		0.25 (1) 139	0.25 (1) 42	
4 (A)					1.00 (1) 42	

RUNWAY 6R

EXIT LINK NO.

OBSERVED PROBABILITY OF USE

(NUMBER OF AIRCRAFT)

AVERAGE RUNWAY OCCUPANCY (SEC)

CLASS	310	305	145			
1 (D)	.30 (3) 47	.40 (4) 70	.30 (3) 70			
2 (C)	.54 (13) 48	.37 (9) 61	.09 (2) 75			
3 (B)						
4 (A)						

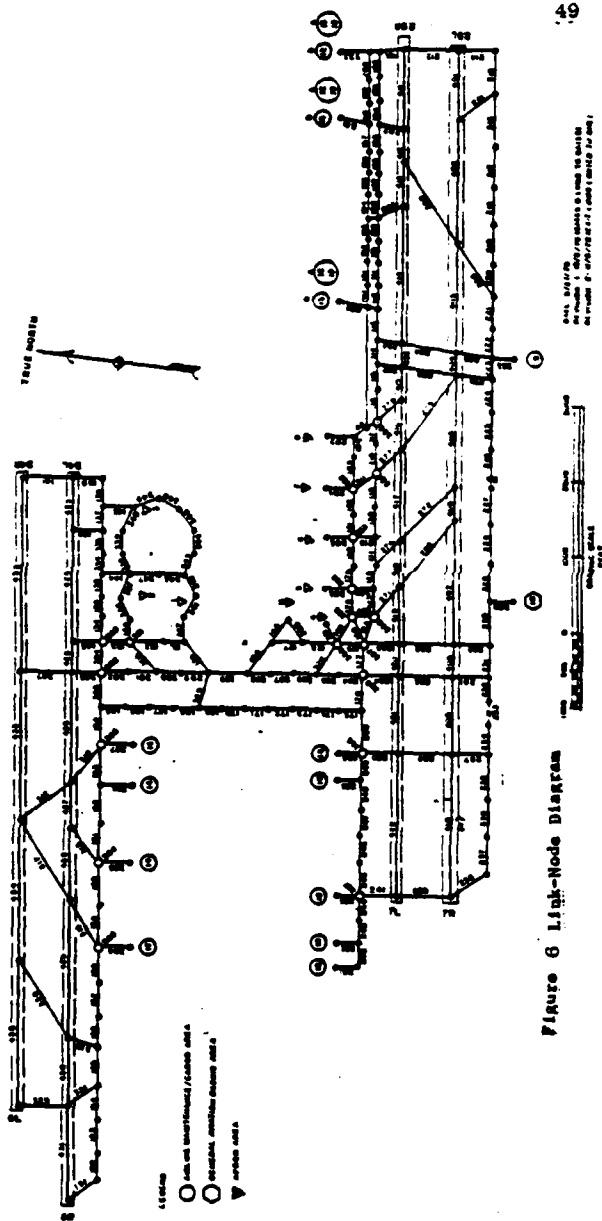
ATTACHMENT D

LINK NODE DIAGRAMS
FOR
STAGE 1 EXPERIMENTS

LOS ANGELES INTERNATIONAL AIRPORT

LOS ANGELES
AIRPORT IMPROVEMENT TASK FORCE DELAY STUDIES

MARCH 1979



ATTACHMENT E
DEMAND FORECASTS
DATA

LOS ANGELES INTERNATIONAL AIRPORT

LOS ANGELES
AIRPORT IMPROVEMENT TASK FORCE DELAY STUDIES

MARCH 1979

The demand forecasts data shown in tables 8 to 13 were taken from the FAA Aviation Forecasts for Los Angeles dated June 1978. The data from the report is shown in figure 8 of this data package.

The figure illustrates two points of interest over the time period from 1978 to 1987. First, the number of air carrier operations are shown to remain relatively constant while the air-taxi operations are projected to increase steadily. Second, the number of passengers will increase substantially over the period of interest.

The response to this increase in demand is reflected in the forecasts required for model demand inputs in two assumed ways. The number of wide-body aircraft operating into the Los Angeles International Airport will increase to accommodate the increase in passengers and the air-taxi operations will upgrade their aircraft fleet and increase the frequency of their operations.

Tables 15 and 16 show the effects of the data provided by the task force on the percentage of operations for each class of aircraft. There is a general trend towards higher number of wide-body aircraft (the percentage of heavy, Class D, aircraft of the total number of operations which increase from 1978 to 1987), and an increase in Class C aircraft due to the upgrading of the air-taxi fleet.

A 4-percent conversion of Class C to Class D operations in the demand forecast data between 1982 and 1987 results in the 30 percent of Class D aircraft operating into the Los Angeles International Airport. This assumption and the demand forecast data should be examined by the task force for use in the 1987 demand projection.

The total number of annual operations will be reduced to an average day in the peak month for the delay model aircraft demand (the actual 1978 annual demand approximates the 1982 projected demand).

DEMAND FORECASTS TABLES

TABLE 8

CIVIL, PUBLIC USE AIRPORTS
The Los Angeles Hub: 1977

AIRPORT NAME	TOWER	MAXIMUM RUNWAY LENGTH (ft)	BASED AIRCRAFT	ANNUAL OPERATIONS				TOTAL
				AIR CARRIER	AIR TAXI	GENERAL AVIATION	MILITARY	
Los Angeles Int'l	FAA	12,080	25	360,500	71,300	65,600	3,600	301,000

FORECAST OF GA OPERATIONS

The Los Angeles Hub: 1975-80

AIRPORT	ACTUAL		FORECAST			
	1975	1976	1980	1985	1990	
Los Angeles International						
Local	9	7	7	7	7	
Itinerant	45	51	53	53	33	

TABLE 9

HOURLY PROFILES OF PASSENGER TRAFFIC ON SCHEDULED FLIGHTS
Los Angeles International
Friday, August 6, 1976

LOCAL TIME	DEPLANEMENTS		EMPLACEMENTS	
		TOTAL		TOTAL
00		1052		1443
01		653		893
02		357		185
03		87		54
04		102		0
05		0		0
06		763		102
07		1218		1558
08		1888		3903
09		1427		4416
10		3267		3456
11		3156		2536
12		2532		4451
13		1418		4185
14		3450		1477
15		2327		2528
16		2433		2217
17		3124		2049
18		3611		2185
19		3900		1802
20		3259		1876
21		3260		1869
22		1180		1747
23		1876		1725
TOTAL DAY		46194		46331
				93137

TABLE 10 and TABLE 11

**PASSENGER AND FREIGHT AIRCRAFT OPERATIONS
BY AIRPORT AND TYPE OF CARRIER
The Los Angeles Hub; 1976-90**

Year	AIR CARRIER							AIR TAXI
	Domestic Certificated		U.S. Flag		Foreign Flag International	Supple- mental	Total	CONSTANT
	Passenger	All-Cargo	Passenger	All-Cargo				
LAX								
1976	279,000	11,700	9,700	1,100	10,000	41,700	256,000	69,000
1980	319,400	12,000	10,000	1,000	10,000	41,000	344,100	86,000
1985	319,200	10,000	11,000	4,700	21,700	41,000	307,000	112,000
1990	267,000	9,000	12,000	4,100	13,100	41,000	368,000	122,000

**TOTAL AIRCRAFT OPERATIONS AT FAA TOWERED AIRPORTS
BY TYPE OF SERVICE
The Los Angeles Hub; 1980-90**

Airport and Class of Traffic	ACTUAL										FORECAST		
	1980	1985	1990	1970	1975	1976	1977	1980	1985	1990			
LOS ANGELES INTERNATIONAL													
Air Carrier	216.1	288.6	415.7	340.1	350.5	360.5	364.7	367.9	368.0				
Air Taxi	1	1	58.2	58.3	63.6	71.3	85.0	112.0	132.0				
General Aviation	51.3	72.3	61.7	54.0	59.7	66.6	60.0	60.0	40.0				
Military	21.6	12.9	8.4	3.4	3.8	3.6	3.7	3.7	3.7				
Total	289.0	374.8	544.0	455.8	492.6	501.0	513.4	543.6	513.7				

AIRCRAFT OPERATIONS FORECASTS FOR LOS ANGELES INTERNATIONAL

[illegible]

TABLE 15

CLASS PERCENTAGES OF
AIR TAXI FLEET*

Class	A	B	C	D
Date				
1978		67%	33%	
1982		50%	50%	
1987		33%	67%	

*Source: Facilities Planning Bureau Memorandum dated 10/30/78
concerning commuter airline activity at LAX

TABLE 16

CLASS PERCENTAGES OF
LOS ANGELES OPERATIONS

Class	A	B	C	D
Date				
*1978	3%	19%	58%	20%
**1981	3%	11%	57%	29%
***1987	2%	9%	59%	30%

*Source: Data Collection

**Source: Table III-1 of Improvement Program Interim Report and Table 15 of this data package

***Source: Table 15 of this data package and an assumed 4% conversion of Class C operations to Class D by airlines at Los Angeles

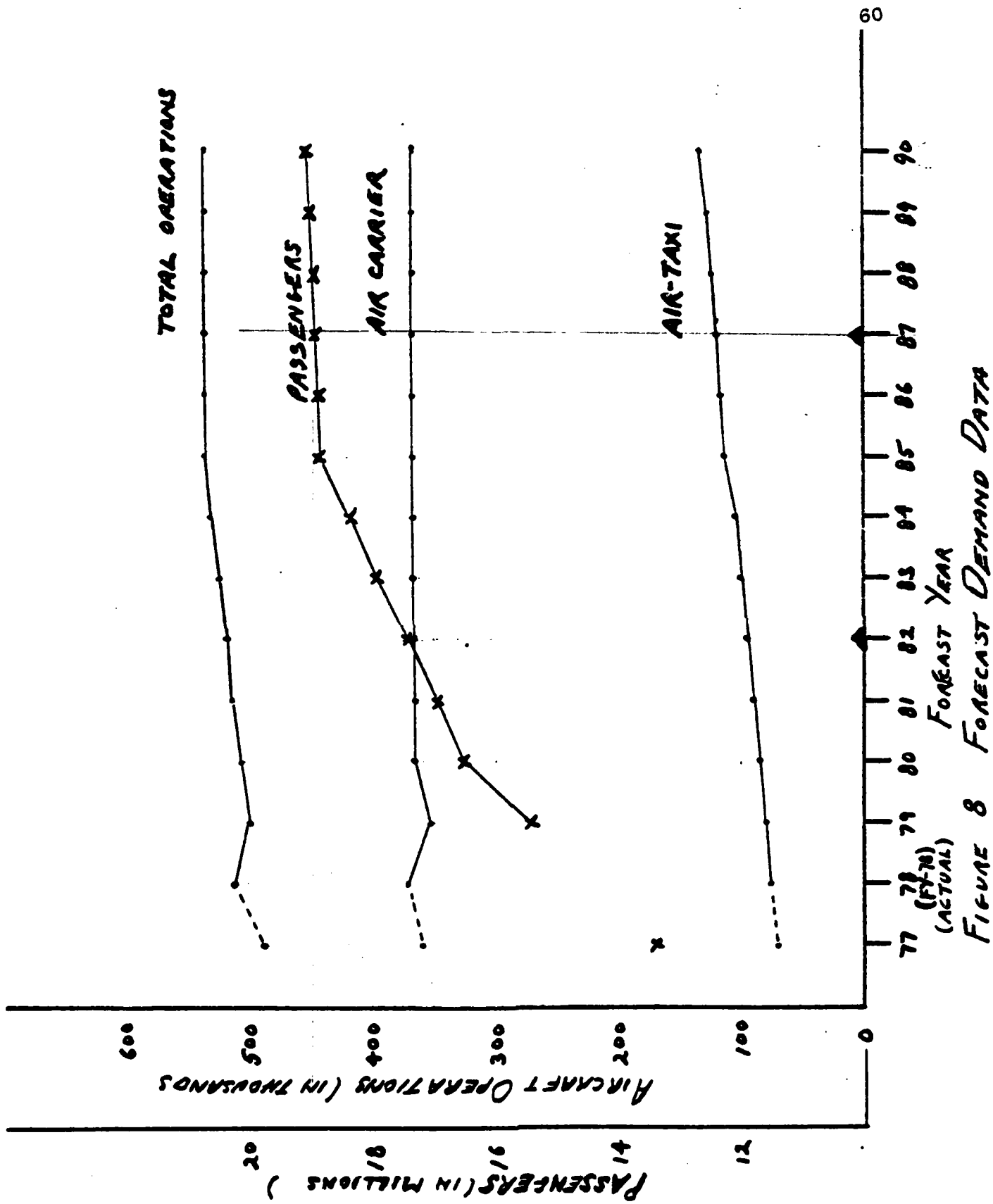


FIGURE 8 FORECAST DEMAND DATA

ATTACHMENT F

PRELIMINARY ANNUAL DELAY BASELINE
DATA PACKAGE

LOS ANGELES INTERNATIONAL AIRPORT

LOS ANGELES
AIRPORT IMPROVEMENT TASK FORCE DELAY STUDIES

MARCH 1979

1. Annual Demand: 500,976 (1977)

2. Group Specification:

3 day groups : High, Average, Low
 12 week groups : 12 months, January through December
 3 weather groups : VFR, IFR1, IFR2

7 runway uses	: Arrivals <u>Runway</u>	Departures <u>Runway</u>
1.	24LR, 25LR	24LR, 25LR
2.	24LR, 25LR	24L, 25R
3.	24R, 25L	24L, 25R
4.	6R, 7L	24L, 25R
5.	6LR, 7LR	6LR, 7LR
6.	6LR, 7LR	6R, 7L
7.	6L, 7R	6R, 7L

3,4. Traffic Distribution:

Week Group	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
% of annual in one week	1.83	1.83	1.88	1.88	1.87	1.98	2.00	2.04	1.98	1.91	1.93	1.86
Number of weeks in month	4.43	4.00	4.43	4.29	4.43	4.29	4.43	4.43	4.29	4.43	4.29	4.43
% of annual in month	8.12	7.32	8.32	8.07	8.30	8.51	8.84	9.05	8.51	8.44	8.28	8.24

5.6. Daily Traffic Distribution:

Day Group	<u>High</u>	<u>Average</u>	<u>Low</u>
% of weekly in one day	15.21	14.58	12.92
Number of days	2	3	2
% of weekly traffic in day group	30.43	43.73	25.84

7. Weather Occurrences: (Task Force Report of LAX Operational Weather, Table 17)

Month	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
%VFR	97.7	83.2	99.1	90.6	96.8	72.7	85.3	84.6	86.4	66.6	93.0	78.1
%IFR1	2.3	13.0	0.9	8.4	3.0	27.3	14.6	15.4	12.3	29.5	5.0	17.6
%IFR2	0	3.8	0	1.0	0.2	0	0.1	0	1.3	3.9	2.0	4.3

8. Hourly Runway Capacity Parameters:

<u>Runway Use</u>	<u>Hourly Capacity</u> (Operations/hour)		
	<u>VFR</u>	<u>IFR1</u>	<u>IFR2</u>
1	—	—	—
2	—	—	—
3	—	—	—
4	—	—	—
5	—	—	—
6	—	—	—
7	—	—	—

9. Runway Use/Weather Group Demand Factors:

For all runway uses:

<u>VFR</u>	<u>Weather</u>	
	<u>IFR1</u>	<u>IFR2</u>
1.0	1.0	0.95

10. Runway Use Occurrences:

<u>Runway Use</u>	<u>Percent Occurrence</u>		
	<u>VFR</u>	<u>IFR1</u>	<u>IFR2</u>
1	63.53	—	—
2	—	9.14	—
3	—	—	1.03
4	18.62	2.68	0.30
5	4.05	—	—
6	—	0.58	0.07
7	—	—	—

86.2

11. Hourly Traffic:

<u>Hour</u>	<u>% daily traffic</u>	<u>Hour</u>	<u>% daily traffic</u>	<u>Hour</u>	<u>% daily traffic</u>	<u>Hour</u>	<u>% daily traffic</u>
00-01	2.7	06-07	1.9	12-13	6.5	18-19	6.5
01-02	1.5	07-08	4.6	13-14	5.7	19-20	6.5
02-03	0.9	08-09	6.8	14-15	4.8	20-21	4.8
03-04	0.6	09-10	5.4	15-16	5.7	21-22	4.8
04-05	0.5	10-11	6.0	16-17	4.8	22-23	4.4
05-06	0.5	11-12	5.8	17-18	5.2	23-24	3.1

12,13. Delay Curve Specification: To be determined after
airfield simulation runs.

14. Percent Arrivals:

<u>Hour</u>	<u>%Arrivals</u>	<u>Hour</u>	<u>%Arrivals</u>	<u>Hour</u>	<u>%Arrivals</u>	<u>Hour</u>	<u>%Arrivals</u>
00-01	50	06-07	54	12-13	46	18-19	59
01-02	50	07-08	44	13-14	35	19-20	57
02-03	55	08-09	36	14-15	58	20-21	61
03-04	43	09-10	31	15-16	54	21-22	58
04-05	83	10-11	49	16-17	52	22-23	44
05-06	67	11-12	58	17-18	54	23-24	54

15. Cancellation Diversion Specification: 75 minutes

16. User-Specified Title: LAX ANNUAL BASELINE

TABLE 17
LAX OPERATIONAL WEATHER

<u>hrs/mo 1977</u>		<u>VFR(%)</u>	<u>IFR(%)</u>	<u>CLOSED(%)*</u>
31 x 24 = 744	Jan.	(97.74)	16:48(2.26)	-
28 x 24 = 672	Feb.	(83.23)	87:15(12.98)	25:29(3.79)
31 x 24 = 744	Mar.	(99.11)	6:37(.89)	-
30 x 24 = 720	Apr.	(90.59)	60:29(8.40)	7:15(1.01)
31 x 24 = 744	May	(96.76)	21:56(2.95)	2:11(.29)
30 = 720	June	(72.71)	196:30(27.29)	-
31 = 744	July	(85.29)	108:23(14.57)	1:02(.14)
31 = 744	Aug.	(84.64)	114:13(15.35)	-
30 = 720	Sept.	(86.35)	88:49(12.34)	9:24(1.31)
31 = 744	Oct.	(66.56)	219:20(29.48)	29:29(3.96)
30 = 720	Nov.	(92.97)	35:48(4.97)	14:51(2.06)
31 = 744	Dec.	(78.15)	130:35(17.55)	31:58(4.3)
1977 Totals			1080:403=1086:43 =1086.72 hrs. (12.41%)	118:219=121:39 =121.65 hrs. (1.39%)

*Closed includes take-off only.

VFR 1000' and three miles or better.

IFR Below VFR to 200' and/or one-half mile.

Take-off
 only Below IFR to CLR and one-fourth mile (2ENG.A/C) or
 100' - one-fourth mile (4 ENG.A/C)

Closed
 alt. ops. Below take-off minima

Note: RVR T/O 2000' (some carriers approved 1600')
 RVR LND 2600'

JLG:MK:st
 11-2-78
 69109

Attachment G

PRELIMINARY MODEL INPUT DATA
FOR STAGE 2 EXPERIMENTS

Los Angeles International Airport

Los Angeles
Airport Improvement Task Force Delay Studies

March 1979

LAX

INDEX OF STAGE 2 EXPERIMENTS

Sequence Number	Experiment Number	Study Case Number	Model	Type of Input Description	Page
1	18	1	ASM	Change-sheet	67
2	19	1	ASM	Change-sheet	69
3	20	1	ASM	Change-sheet	71
4	21	1	ASM	Change-sheet	72
5	25	1	ASM	Change-sheet	74
6	26	2	ASM	Change-sheet	76
7	22	7	ASM	Change-sheet	78
8	22A	8	ASM	Change-sheet	80
9	23	8	ASM	Change-sheet	82
10	24	8	ASM	Change-sheet	89

TABLE 18 10
LOS ANGELES DELAY EXPERIMENTS

Experiment number	Model	Study case ^a	Arrival Runways	Departure Runways	Weather	Demand	ATC System ^b scenario	Near-term improvements ^c
Stage 2 Experiments								
18	ASM	1	24L, 24R, 25L, 25R	24L, 24R, 25L, 25R	VFR1	1982	1982	10 ¹
19	ASM	1	24L, 24R, 25L, 25R	24L, 24R, 25L, 25R	VFR1	1982	1982	11 ^m
20	ASM	1	24L, 24R, 25L, 25R	24L, 24R, 25L, 25R	VFR1	1982	1982	Terminal Expansion ⁿ
21	ASM	1	24L, 24R, 25L, 25R	24L, 24R, 25L, 25R	VFR1	1982	1982	Remote Terminal ^o
22	ASM	7	24L, 24R, 25L	24L, 24R, 25L	VFR1	1982	1982	Tunnel Construction ^p *Change
22A	ASM	8	24L, 24R, 25L	24L, 24R, 25L	VFR1	1982	1978	Dual Taxiway ^p
23	ASM	8	24R, 25L	24L, 25L	IFR1	1982	1982	Tunnel Construction 25R *Change
24	ASM	9	24R, 25R	24L, 25R	IFR1	1982	1982	Tunnel Construction 25L *Change
25	ASM	1	24L, 24R, 25L, 25R	24L, 24R, 25L, 25R	VFR1	1987	1987	1987 ^e
26	ASM	2	24L, 24R, 25L, 25R	24L, 25R	IFR1	1987	1987	1987 * Change
27	ADM	n.a.	n.a.	n.a.	n.a.	1982	1982	1982
28	ADM	n.a.	n.a.	n.a.	n.a.	1982	1982	None
29	ADM	n.a.	n.a.	n.a.	n.a.	1982	1978	1982
30	ADM	n.a.	n.a.	n.a.	n.a.	1982	1978	None
31	ADM	n.a.	n.a.	n.a.	n.a.	1987	1987	1987
32	ADM	n.a.	n.a.	n.a.	n.a.	1987	1987	None
33	ADM	n.a.	n.a.	n.a.	n.a.	1987	1978	1987
34	ADM	n.a.	n.a.	n.a.	n.a.	1987	1988	None

1. Improvement #10 consists of a series of taxiway improvements identified in Appendix B.
- m. Improvement #11 contains temporary holding areas on present Taxiway 47 west of Satellites 3 and 4. The need for this experiment will be reviewed by the Task Force after consideration of temporary holding areas on future Taxiway 75.
- n. Construction of Satellite 1 and International Terminal. The need for this experiment will be reviewed by the Task Force after consideration of future airline terminal locations.
- o. Remote parking for 20 aircraft at west end of Airport.
- p. Additional experiment may be needed to test value of dual taxiway system around Satellite 4 during tunnel construction!

LAX - STAGE 2EXPERIMENT NO. 18Objective:

To assess delays to aircraft in 1982 for the following runway configuration in VFR 1 with an improved ATC system scenario and improvement #10 (taxiways).

ARRIVAL RUNWAYS

24R, 24L, 25R, 25L

DEPARTURE RUNWAYS

24R, 24L, 25R, 25L

Related Comparison Experiments:

Experiment #19 is identical except for improvement #11 (temporary holding areas on taxiway 47 west of satellites 3 and 4).

Prior Experiment #11 is identical except for improvement #10 (taxiway improvements).

Remaining Data Items:

- . New route structure

Experiment Number: 18 (Input changes from experiment number ⁶⁸

11)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1. Title	
2. Random number seeds	
3. Start and finish times	
4. Print options	
5. Airline names	
6. Processing options	
7. Truncation limits	
8. Time switch	
B. Airfield Physical Characteristics	Configuration "A"
9. Airfield network	
10. Number of runways	
11. Runway identification	
12. Departure runway and links	
13. Runway crossing links	
14. Exit taxiway location	
15. Holding areas	
16. Airline gates	
17. General aviation basing areas	
C. ATC Procedures	
18. Aircraft separation	
19. Route data	New routes
20. Two-way path data	
21. Common approach paths	
22. Vectoring delays	
23. Departing runway queue control	
24. Gate hold control	
25. Departure airspace constraints	
26. Departure queue	
27. Runway crossing delay control	
D. Aircraft Operational Characteristics	
28. Exit taxiway utilization	
29. Arrival runway occupancy times	
30. Touch-and-go runway occupancy times	
31. Departure runway occupancy times	
32. Taxi speeds	
33. Approach speeds	
34. Gate service times	
35. Airspace travel times	
36. Runway crossing times	
37. Lateness distributions	
38. Demand	

LAX - STAGE 2EXPERIMENT NO. 19Objective:

To assess delays to aircraft in 1982 for the following runway configuration in VFR 1 with an improved ATC system scenario and improvement #11 (temporary holding areas on taxiway 47).

ARRIVAL RUNWAYS

24R, 24L, 25R, 25L

DEPARTURE RUNWAYS

24R, 24L, 25R, 25L

Related Comparison Experiments:

Experiment #20 is identical except for terminal expansion.
(Construction of satellite 1 and international terminal)

Prior Experiment #18 is identical except for improvement #11
(temporary holding areas on taxiway 47 west of satellites 3 and 4).

Remaining Data Items:

- . New holding area
(on present taxiway 47 west of satellites 3 and 4)

Experiment Number:

19

(Input changes from experiment number

70

18)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1. Title	
2. Random number seeds	
3. Start and finish times	
4. Print options	
5. Airline names	
6. Processing options	
7. Truncation limits	
8. Time switch	
B. Airfield Physical Characteristics	Configuration "A"
9. Airfield network	
10. Number of runways	
11. Runway identification	
12. Departure runway and links	
13. Runway crossing links	
14. Exit taxiway location	
15. Holding areas	New holding area
16. Airline gates	
17. General aviation basing areas	
C. ATC Procedures	
18. Aircraft separation	
19. Route data	
20. Two-way path data	
21. Common approach paths	
22. Vectoring delays	
23. Departing runway queue control	
24. Gate hold control	
25. Departure airspace constraints	
26. Departure queue	
27. Runway crossing delay control	
D. Aircraft Operational Characteristics	
28. Exit taxiway utilization	
29. Arrival runway occupancy times	
30. Touch-and-go runway occupancy times	
31. Departure runway occupancy times	
32. Taxi speeds	
33. Approach speeds	
34. Gate service times	
35. Airspace travel times	
36. Runway crossing times	
37. Lateness distributions	
38. Demand	

LAX - STAGE 2EXPERIMENT NO. 20Objective:

To assess delays to aircraft in 1982 for the following runway configuration in VFR 1 with an improved ATC system scenario and terminal expansion.

ARRIVAL RUNWAYS

24R, 24L, 25R, 25L

DEPARTURE RUNWAYS

24R, 24L, 25R, 25L

Related Comparison Experiments:

Experiment #21 is identical except for remote parking for 20 aircraft at west end of airport.

Prior Experiment #19 is identical except for terminal expansion.

Remaining Data Items:

- . New demand distributions
(Gate area assignments)
- . New route structure

Experiment Number:

20(Input changes from experiment number ⁷²19)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1. Title	
2. Random number seeds	
3. Start and finish times	
4. Print options	
5. Airline names	
6. Processing options	
7. Truncation limits	
8. Time switch	
B. Airfield Physical Characteristics	Configuration "A"
9. Airfield network	
10. Number of runways	
11. Runway identification	
12. Departure runway and links	
13. Runway crossing links	
14. Exit taxiway location	
15. Holding areas	
16. Airline gates	
17. General aviation basing areas	
C. ATC Procedures	
18. Aircraft separation	
19. Route data	New routes
20. Two-way path data	
21. Common approach paths	
22. Vectoring delays	
23. Departing runway queue control	
24. Gate hold control	
25. Departure airspace constraints	
26. Departure queue	
27. Runway crossing delay control	
D. Aircraft Operational Characteristics	
28. Exit taxiway utilization	
29. Arrival runway occupancy times	
30. Touch-and-go runway occupancy times	
31. Departure runway occupancy times	
32. Taxi speeds	
33. Approach speeds	
34. Gate service times	
35. Airspace travel times	
36. Runway crossing times	
37. Lateness distributions	
38. Demand	New demand distribution

LAX - STAGE 2EXPERIMENT NO. 21Objective:

To assess delays to aircraft in 1982 for the following runway configuration in VFR 1 with an improved ATC system scenario and remote parking for 20 aircraft.

ARRIVAL RUNWAYS

24R, 24L, 25R, 25L

DEPARTURE RUNWAYS

24R, 24L, 25R, 25L

Related Comparison Experiments:

Prior Experiment #20 is identical except for remote parking for 20 aircraft at west end of airport.

Remaining Data Items:

- . New route structure
(Gate area assignments)
- . New demand distribution

Experiment Number:

21

(Input changes from experiment number

74

20)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1. Title	
2. Random number seeds	
3. Start and finish times	
4. Print options	
5. Airline names	
6. Processing options	
7. Truncation limits	
8. Time switch	
B. Airfield Physical Characteristics	Configuration "A"
9. Airfield network	
10. Number of runways	
11. Runway identification	
12. Departure runway and links	
13. Runway crossing links	
14. Exit taxiway location	
15. Holding areas	
16. Airline gates	
17. General aviation basing areas	
C. ATC Procedures	
18. Aircraft separation	
19. Route data	New routes to gate area
20. Two-way path data	
21. Common approach paths	
22. Vectoring delays	
23. Departing runway queue control	
24. Gate hold control	
25. Departure airspace constraints	
26. Departure queue	
27. Runway crossing delay control	
D. Aircraft Operational Characteristics	
28. Exit taxiway utilization	
29. Arrival runway occupancy times	
30. Touch-and-go runway occupancy times	
31. Departure runway occupancy times	
32. Taxi speeds	
33. Approach speeds	
34. Gate service times	
35. Airspace travel times	
36. Runway crossing times	
37. Lateness distributions	
38. Demand	New demand distribution

LAX - STAGE 2EXPERIMENT NO. 25Objective:

To assess delays to aircraft in 1987 for the following runway configuration in VFR 1 with an improved 1987 ATC system scenario and 1982 improvements plus the satellite terminal and/or remote parking for 20 aircraft.

ARRIVAL RUNWAYS

24R, 24L, 25R, 25L

DEPARTURE RUNWAYS

24R, 24L, 25R, 25L

Related Comparison Experiments:

Prior Experiment #11 is identical except for the improvements from 1982 to 1987 and the demand.

Remaining Data Items:

- . Demand distributions

Experiment Number:

25(Input changes from experiment number ⁷⁶11)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1. Title	
2. Random number seeds	
3. Start and finish times	
4. Print options	
5. Airline names	
6. Processing options	
7. Truncation limits	
8. Time switch	
B. Airfield Physical Characteristics	Configuration "A"
9. Airfield network	
10. Number of runways	
11. Runway identification	
12. Departure runway and links	
13. Runway crossing links	
14. Exit taxiway location	
15. Holding areas	
16. Airline gates	
17. General aviation basing areas	
C. ATC Procedures	
18. Aircraft separation	
19. Route data	
20. Two-way path data	
21. Common approach paths	
22. Vectoring delays	
23. Departing runway queue control	
24. Gate hold control	
25. Departure airspace constraints	
26. Departure queue	
27. Runway crossing delay control	
D. Aircraft Operational Characteristics	
28. Exit taxiway utilization	
29. Arrival runway occupancy times	
30. Touch-and-go runway occupancy times	
31. Departure runway occupancy times	
32. Taxi speeds	
33. Approach speeds	
34. Gate service times	
35. Airspace travel times	
36. Runway crossing times	
37. Lateness distributions	
38. Demand	1987 Demand

LAX - STAGE 2EXPERIMENT NO. 26Objective:

To assess delays to aircraft in 1987 for the following runway configuration in IFR 1 with an improved 1987 ATC system scenario and 1982 improvements plus the satellite terminal and/or remote parking for 20 aircraft.

ARRIVAL RUNWAYS

24R, 24L, 25R, 25L

DEPARTURE RUNWAYS

24L, 25R

Related Comparison Experiments:

Prior Experiment #12 is identical except for the improvements from 1982 to 1987 and the demand.

Remaining Data Items:

. Demand distributions

Experiment Number:

26(Input changes from experiment number ⁷⁸12)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1. Title	
2. Random number seeds	
3. Start and finish times	
4. Print options	
5. Airline names	
6. Processing options	
7. Truncation limits	
8. Time switch	
B. Airfield Physical Characteristics	Configuration "A"
9. Airfield network	
10. Number of runways	
11. Runway identification	
12. Departure runway and links	
13. Runway crossing links	
14. Exit taxiway location	
15. Holding areas	
16. Airline gates	
17. General aviation basing areas	
C. ATC Procedures	
18. Aircraft separation	
19. Route data	
20. Two-way path data	
21. Common approach paths	
22. Vectoring delays	
23. Departing runway queue control	
24. Gate hold control	
25. Departure airspace constraints	
26. Departure queue	
27. Runway crossing delay control	
D. Aircraft Operational Characteristics	
28. Exit taxiway utilization	
29. Arrival runway occupancy times	
30. Touch-and-go runway occupancy times	
31. Departure runway occupancy times	
32. Taxi speeds	
33. Approach speeds	
34. Gate service times	
35. Airspace travel times	
36. Runway crossing times	
37. Lateness distributions	
38. Demand	1987 Demand

LAX - STAGE 2

79

EXPERIMENT NO. 22

Objective:

To assess the delay impact to aircraft in 1978 for the following runway configuration in VFR 1 due to the runway closure of 25R during work on the Spulveda Tunnel.

ARRIVAL RUNWAYS

24R, 24L, 25L

DEPARTURE RUNWAYS

24R, 24L, 25L

Related Comparison Experiments:

Prior Experiment #1 is identical except for closure of 25R for tunnel construction.

Remaining Data Items:

Experiment Number:

22(Input changes from experiment number ⁸⁰1)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1. Title	
2. Random number seeds	
3. Start and finish times	
4. Print options	
5. Airline names	
6. Processing options	
7. Truncation limits	
8. Time switch	
B. Airfield Physical Characteristics	Configuration "A"
9. Airfield network	
10. Number of runways	
11. Runway identification	
12. Departure runway and links	
13. Runway crossing links	
14. Exit taxiway location	
15. Holding areas	
16. Airline gates	
17. General aviation basing areas	
C. ATC Procedures	
18. Aircraft separation	
19. Route data	
20. Two-way path data	
21. Common approach paths	
22. Vectoring delays	
23. Departing runway queue control	
24. Gate hold control	
25. Departure airspace constraints	
26. Departure queue	
27. Runway crossing delay control	
D. Aircraft Operational Characteristics	
28. Exit taxiway utilization	
29. Arrival runway occupancy times	
30. Touch-and-go runway occupancy times	
31. Departure runway occupancy times	
32. Taxi speeds	
33. Approach speeds	
34. Gate service times	
35. Airspace travel times	
36. Runway crossing times	
37. Lateness distributions	
38. Demand	Reassign arrivals and departures from 25R to 25L

LAX - STAGE 2EXPERIMENT NO. 22AObjective:

To assess the delay impact to aircraft in 1982 for the following runway configuration in VFR 1 due to the runway closure of 25R during work on the Sepulveda Tunnel with a dual taxiway system around satellite 4.

ARRIVAL RUNWAYS

24L, 24R, 25L

DEPARTURE RUNWAYS

24L, 24R, 25L

Related Comparison Experiments:

- Prior Experiment #22 is identical except for a dual taxiway system and a 1982 demand.

Remaining Data Items:

Experiment Number:

22A (Input changes from experiment number ⁸². 22)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1. Title	
2. Random number seeds	
3. Start and finish times	
4. Print options	
5. Airline names	
6. Processing options	
7. Truncation limits	
8. Time switch	
B. Airfield Physical Characteristics	Configuration "A"
9. Airfield network	
10. Number of runways	
11. Runway identification	
12. Departure runway and links	
13. Runway crossing links	
14. Exit taxiway location	
15. Holding areas	
16. Airline gates	
17. General aviation basing areas	
C. ATC Procedures	
18. Aircraft separation	
19. Route data	New route structure
20. Two-way path data	
21. Common approach paths	
22. Vectoring delays	
23. Departing runway queue control	
24. Gate hold control	
25. Departure airspace constraints	
26. Departure queue	
27. Runway crossing delay control	
D. Aircraft Operational Characteristics	
28. Exit taxiway utilization	
29. Arrival runway occupancy times	
30. Touch-and-go runway occupancy times	
31. Departure runway occupancy times	
32. Taxi speeds	
33. Approach speeds	
34. Gate service times	
35. Airspace travel times	
36. Runway crossing times	
37. Lateness distributions	
38. Demand	Reassign arrivals and departures from 25R to 25L (1982 Demand)

LAX - STAGE 2EXPERIMENT NO. 23Objective:

To assess the delay impact to aircraft in 1978 for the following runway configuration in IFR 1 due to the runway closure of 25R during work on the Sepulveda Tunnel.

ARRIVAL RUNWAYS

24R, 25L

DEPARTURE RUNWAYS

24L, 25L

Related Comparison Experiments:

Prior experiment #2 is identical except for the closure of runway 25R.

Remaining Data Items:

Experiment Number:

23

(Input changes from experiment number

84

2)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1. Title	
2. Random number seeds	
3. Start and finish times	
4. Print options	
5. Airline names	
6. Processing options	
7. Truncation limits	
8. Time switch	
B. Airfield Physical Characteristics	Configuration "A"
9. Airfield network	
10. Number of runways	
11. Runway identification	
12. Departure runway and links	
13. Runway crossing links	
14. Exit taxiway location	
15. Holding areas	
16. Airline gates	
17. General aviation basing areas	
C. ATC Procedures	
18. Aircraft separation	
19. Route data	New departure routes to 25R for Class 4
20. Two-way path data	
21. Common approach paths	
22. Vectoring delays	
23. Departing runway queue control	
24. Gate hold control	
25. Departure airspace constraints	
26. Departure queue	
27. Runway crossing delay control	
D. Aircraft Operational Characteristics	
28. Exit taxiway utilization	
29. Arrival runway occupancy times	
30. Touch-and-go runway occupancy times	
31. Departure runway occupancy times	
32. Taxi speeds	
33. Approach speeds	
34. Gate service times	
35. Airspace travel times	
36. Runway crossing times	
37. Lateness distributions	
38. Demand	Reassign arrival and departures from 25R to 25L

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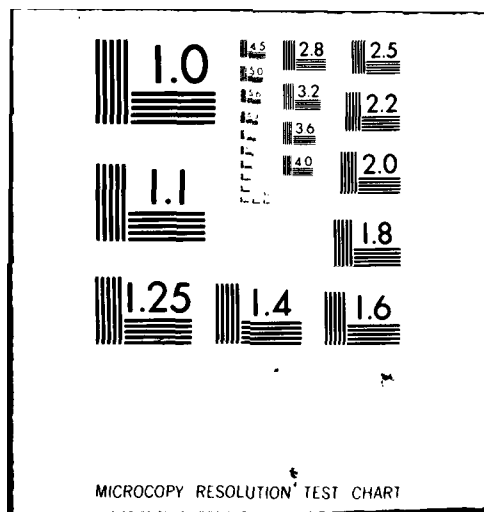
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LAX - STAGE 2EXPERIMENT NO. 24Objective:

To assess the delay impact to aircraft in 1978 for the following runway configuration in IFR 1 due to the runway closure of 25L during work on the Sepulveda Tunnel (in 79).

ARRIVAL RUNWAYS

24R, 25R

DEPARTURE RUNWAYS

24L, 25R

Related Comparison Experiments:

Prior Experiment #2 is identical except for the closure of runway 25L for tunnel construction.

Remaining Data Items:

Experiment Number:

24

(Input changes from experiment number

86

2

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SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1. Title	
2. Random number seeds	
3. Start and finish times	
4. Print options	
5. Airline names	
6. Processing options	
7. Truncation limits	
8. Time switch	
B. Airfield Physical Characteristics	Configuration "A"
9. Airfield network	
10. Number of runways	
11. Runway identification	
12. Departure runway and links	
13. Runway crossing links	
14. Exit taxiway location	
15. Holding areas	
16. Airline gates	
17. General aviation basing areas	
C. ATC Procedures	
18. Aircraft separation	
19. Route data	
20. Two-way path data	
21. Common approach paths	
22. Vectoring delays	
23. Departing runway queue control	
24. Gate hold control	
25. Departure airspace constraints	
26. Departure queue	
27. Runway crossing delay control	
D. Aircraft Operational Characteristics	
28. Exit taxiway utilization	
29. Arrival runway occupancy times	
30. Touch-and-go runway occupancy times	
31. Departure runway occupancy times	
32. Taxi speeds	
33. Approach speeds	
34. Gate service times	
35. Airspace travel times	
36. Runway crossing times	
37. Lateness distributions	
38. Demand	Reassign arrival and departures from 25L to 25R